Vol. 1062 Number 2

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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

January 14, 1986

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OF COMMERCE

Patent
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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *PCT Gazette* on Oct. 24, 1985 and in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before Feb. 9, 1986	750.00
if paid on or after Feb. 9, 1986	830.00
International fees	
Basic fee (first 30 pages):	
if paid before Jan. 1, 1986	280.00
if paid on or after Jan. 1, 1986	325.00
Basic Supplemental fee (for each page over 30):	
if paid before Jan. 1, 1986	6.00
if paid on or after Jan. 1, 1986	6.00
Designation fee for the first 10 national or regional offices:	
if paid before Jan. 1, 1986	70.00
if paid on or after Jan. 1, 1986	80.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Dec. 17, 1985. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Jan. 11, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,367,561 through 4,368,543
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges, as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the pa-

tent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patent listed below has expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENT WHICH EXPIRED OCTOBER 27, 1985 DUE TO FAILURE TO PAY MAINTENANCE FEE

Patent Number	Serial Number	Issue Date
4,297,354	06/216,423	10/27/81

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,414,516, Re. S.N. 795,426, Filed Nov. 6, 1985, Cl. 333/21A, POLARIZED SIGNAL RECEIVER SYSTEM, H. Taylor Howard, Owner of Record: *Chaparral Communications, Inc., San Jose, Calif.,* Attorney or Agent: William E. Pelton, et al., Ex. Gp.: 252

4,415,170, Re. S.N. 795,646, Filed Nov. 6, 1985, Cl. 277/163, DOUBLE TORIC SEALING RING, Maurice Bonafous, Owner of Record: *Industrielle A.M.R.I., Paris, France,* Attorney or Agent: M. H. Gay, Ex. Gp.: 246

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Registration to Practice

The results of the examination for registration to practice before the United States Patent and Trademark Office held on Oct. 8, 1985 were mailed to 380 candidates on Dec. 13, 1985. The following list contains the names of persons who succesfully passed the examination. These persons have been given provisional recognition pursuant to 37 CFR 10.9(a) for a period of 90 days from Dec. 13, 1985 to prepare and prosecute patent applicaions before the Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. 37 CFR 10.7(a). Accordingly, any information tending to affect the eligibility of any of the following persons on moral, ethical, or other grounds should be furnished to the Director of Enrollment and Discipline on or before Feb. 17, 1986.

Abbatt, William G., 600 Morley Ct., Dearborn, Mich. 48124

Abrams, Hugh A., One Wheaton Center, #1906, Wheaton, Ill. 60187

Ahlersmeyer, David L., 2809 Hollypark Dr., Indianapolis, Ind. 46241

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Anderson, Rodney M., 1902 Feather Ridge Dr., Missouri City, Tex. 77489

Barker M. Paul, 4100 N. 11th Pl., Arlington, Va. 22201

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Benson, Christopher R., 1400 Woodhollow, #8708, Houston, Tex. 77057

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Bohn, David C., 10440 Salem Ct., Eden Prairie, Ill. 55344

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Bruhn, Mildred S., 400 Eastlawn, Midland, Mich. 48640

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Chartove, Alex, 116 Rose, #12, Venice, Calif. 90291

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Economou, Vangelis, 315 E. Nelson Ave., Alexandria, Va. 22301

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Espinosa, Noemi C., 1332 10th Ave., #301, San Francisco, Calif. 94122

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Gresalfi, Richard S., 142 Main St., #1A, Mineola, N.Y. 11501

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Hankins, John A., 1203 N. Courthouse Rd., #24, Arlington, Va. 22201
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Hansen, Eugenia S., 325 Post Oak, Grand Prairie, Tex. 75050
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Heim, Louise S., 613 Acker St., N.E., Washington, D.C. 20002
Hennessey, William C., 39 Washington St., Concord, N.H. 03301
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Higgins, Michael J., 415 W. Willow St., Lombard, Ill. 60148
Hjorth, Beverly E., 375 Bellevue Ave., #108, Oakland, Calif. 94610
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Inoue, Bryan T., 13100 Bromont Ave., Sylmar, Calif. 91342
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Medlen, Virginia S., 3000 Duchess Trail, Plano, Tex. 75074
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Mican, Stephen G., 4365 Raleigh Ave., Alexandria, Va. 22304
Miller, John W., 1734 Osage, Bartlesville, Okla. 74003
Miller, Steven W., 3306 York La., Cincinnati, Ohio 45215
Minns, Michael H., 11458 Fowlers Mill Rd., Chardon, Ohio 44024
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Musgrove, Jack V., 4156 Lomita La., Dallas, Tex. 75220
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Ruben, Bradley N., 805-336 N. Howard St., Alexandria, Va. 22304
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Santangelo, Luke R., 708 Smith St., Ft. Collins, Colo. 80524
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Schoumacher, Rebecca B., 1734-B Woodcrest Rd., Birmingham, Ala. 35205
Schroeder, Michael B., 9901 Sharpcrest, #L-7, Houston, Tex. 77036
Scott, Steven R., 5433 State Rd. 218, Middleburg, Fla. 32068
Shay, Bernard E., 192 Charter Circle, Ossing, N.Y. 10562
Shay, James R., 1547 44th St., N.W., Washington, D.C. 20007
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Shubin, Harry B., 9108 Saranac Ct., Fairfax, Va. 22032
Smith, Alan D., 325 W. 89th St., New York, N.Y. 10024
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Stewart, David E., 5297 Scenic Ct., Middleton, Wis. 53562
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Sullivan, Sally A., 440 Oakwood Pl., Boulder, Colo. 80302
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Weber, Richard G., 11 Butter Rd., Dover, Pa. 17315
Wedemeyer, Lowell R., 3002 Catalina Dr., Davis, Calif. 95616
White, Paul E., Jr., 2103 Rampart Dr., Alexandria, Va. 22308
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Wolfs, Denise Y., 2 Rutgers Pl., Houston, Tex. 77005
Wolstoncroft, Bruce J., 523 Siesta Ct., Pittsburgh, Pa. 15205
Wrist, Christopher P., 5804 MacArthur Blvd., Washington, D.C. 20016
Zito, Joseph J., 2749 Loch Haven Dr., Ijamsville, Md. 21754

CAMERON WEIFFENBACH,
Dec. 17, 1985 *Director, Office of Enrollment & Discipline.*

Patents Available for Licensing or Sale

General Electric Co. is prepared to grant nonexclusive licenses under the following patent upon reasonable terms to domesitc manufacturers.

Applications for license may be addressed to: General Electric Co., Motor Business Group, 1635 Broadway, P.O. Box 2204, Attention: Patent Counsel.

3,862,491. METHOD FOR EVALUATING MANUFACTURING OPERATIONAL EFFECTS ON INSULATED WINDINGS.
4,205,247. PRIME MOVER AND METHODS.
4,233,535. PRIME MOVER HAVING A LEAKAGE FLUX CONDUCTING DEVICE SECURED THERETO.

3,844,901. COKE OVEN EMISSION CONTROL SYSTEM. *Adrian J. Good,* P.O. Box 1031, Elizabethton, Tenn., 37643, 615-543-3111, Ext. 3208.
4,401,894. AUTOMATIC UNINTERRUPTED D.C. POWER SOURCE SWITCH. *Daniel M. Weisner,* 127 Davis Ct., Mt. Airy, Md. 21771, 301-986-8881.
4,541,597. ADJUSTABLE SELF-SUPPORT STAND, *Neil F. Greenblum, Esq.,* c/o Sandler & Greenblum, 701 S. 23rd St., Arlington, Va. 22202, 703-521-7800.
4,550,691. FUEL SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINES. *Duncan R. McWade, Rte. 2, Box 96, Foxworth, Miss. 39483.*

Holiday Relating to Birthday of Martin Luther King

Public Law 98-144 enacted Nov. 2, 1983, amended 5 USC 6103 to indicate that the third Monday in Jan. would be a new legal holiday relating to the birthday of Martin Luther King and that this amendment would take effect in 1986.

Accordingly, Jan. 20, 1986, and the third Monday in Jan. thereafter, will be included as Federal holidays within the District of Columbia. The Patent and Trademark Office will not receive papers on that date in accordance with 37 CFR 1.6(a) and 1.10(a). Actions required to be taken on the third Monday in Jan. may be taken on the next succeeding day that the Office is open for business in accordance with 37 CFR 1.7.

DONALD J. QUIGG,
Dec. 23, 1985. *Assistant Secretary and Commissioner of Patents and Trademarks.*

PATENT NOTICES

Certificates of Correction for the Week of Jan. 14, 1986

D. 278,366	4,508,599	4,530,906	4,543,639
D. 279,220	4,510,207	4,531,063	4,543,707
D. 280,758	4,511,001	4,531,893	4,544,032
D. 280,790	4,511,354	4,531,894	4,544,724
3,760,003	4,511,675	4,533,730	4,544,819
4,252,591	4,511,781	4,534,376	4,545,234
4,337,340	4,513,026	4,534,557	4,545,258
4,361,924	4,515,763	4,534,793	4,545,324
4,364,888	4,516,515	4,534,857	4,545,382
4,408,013	4,517,013	4,535,669	4,545,522
4,417,864	4,517,096	4,535,727	4,545,544
4,434,047	4,517,244	4,536,842	4,545,597
4,436,398	4,517,355	4,536,878	4,546,352
4,443,429	4,517,605	4,537,411	4,546,616
4,458,084	4,518,044	4,537,600	4,546,962
4,468,390	4,518,456	4,538,945	4,547,308
4,470,185	4,521,901	4,538,969	4,547,334
4,472,825	4,522,409	4,539,040	4,547,359
4,476,134	4,522,582	4,539,175	4,547,621
4,477,682	4,522,734	4,539,490	4,547,635
4,480,879	4,522,788	4,539,732	4,547,665
4,482,239	4,522,944	4,539,921	4,547,883
4,482,240	4,523,127	4,540,215	4,548,272
4,482,570	4,523,500	4,540,497	4,548,279
4,484,724	4,523,826	4,540,895	4,548,751
4,491,900	4,524,178	4,541,505	4,548,969
4,493,662	4,524,289	4,542,062	4,549,444
4,498,050	4,524,554	4,542,456	4,550,193
4,498,521	4,525,613	4,542,628	4,550,524
4,499,327	4,526,528	4,542,746	4,550,842
4,499,680	4,528,575	4,543,330	4,551,103
4,501,419	4,528,598	4,543,347	4,551,232
4,504,902	4,528,702	4,543,399	4,551,253
4,506,749	4,529,170	4,543,421	4,551,396
4,506,963	4,529,384	4,543,430	4,551,450
4,508,160	4,529,615	4,543,627	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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	St. Louis Public Library	(314) 241-2288 Ext. 390
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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 7, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-14-84
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-15-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-01-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	3-02-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	3-21-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	6-15-84
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	8-30-83
DESIGN, GROUP 290—K. L. CAGE, Director	3-14-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	4-11-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-30-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	10-19-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-02-84

Expiration of patents: The patents within the range of numbers indicated below expire during October 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,413,656 to 3,419,906, inclusive

Plant Patents . . . . . Numbers 2,847 to 2,855 inclusive

REISSUES

JANUARY 14, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,062

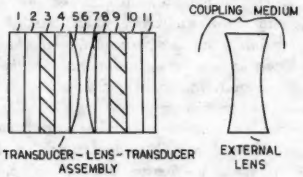
MULTIPLE FIELD ACOUSTIC FOCUSSER

Arthur J. Samodovitz, One Lakeshore Dr., Apt. A-4, Farmington, Conn. 06032

Original No. 4,387,599, dated Jun. 14, 1983, Ser. No. 222,947, Jan. 6, 1981. Application for reissue Aug. 29, 1983, Ser. No. 529,224

Int. Cl.[4] G10K *11/30*

U.S. Cl. 73—642 **16 Claims**



10. A unitary apparatus for focussing acoustic waves comprising:
a first acoustic lens,
a first piezoelectric element,
a second acoustic lens, and
a second piezoelectric element, said acoustic lenses and said piezoelectric elements located in order and situated such that one line can intersect opposite faces of each acoustic lens and each piezoelectric element, said first acoustic lens focussing acoustic waves produced by said first piezoelectric element, and said first and second acoustic lenses collectively focussing acoustic waves produced by said second piezoelectric element.

Re. 32,063

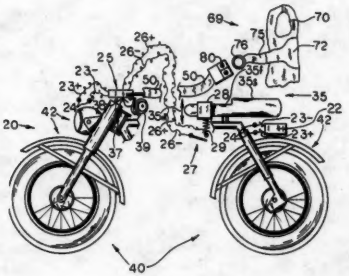
MOTORCYCLE SAFETY-RELEASE BACK REST

Gregory K. Schultz, 22386 Gratiot Rd., Merrill, Mich. 48637

Original No. 4,359,129, dated Nov. 16, 1982, Ser. No. 83,647, Oct. 11, 1979. Application for reissue Sep. 13, 1984, Ser. No. 650,268

Int. Cl.[4] A62B *35/02*

U.S. Cl. 180—268 **62 Claims**



52. A releasable back support assembly for use by a rider seated on a cycle frame having wheel means at its forward and rearward ends and a seat for such rider between said wheel means, said assembly comprising a sling-like member for embracing the rider's back; movable anchor means carried by said frame forwardly of said seat; strap means separably secured at one end to said anchor means and at its opposite end to said member, said strap means being of such length as to be taut and provide support for the rider's back when the rider leans rearwardly against said member; electrical operating means coupled to said anchor means and operable to move the latter from a first position in which it secures said one end of said strap means to said frame to a second position in which said one end of said strap means is disengageable from said anchor means; and electrical actuating means coupled to said operating means for operating the latter said actuating means including means movable between closed and open positions in response to seating and unseating of the rider on and from said seat.

Re. 32,064

ATOMIZER WHEEL FOR THE ATOMIZATION OF SUSPENSIONS OF HARD-WEARING MATERIALS

Kaj Nielsen, Bagsvaerd, Denmark, assignor to Aktieselskabet Niro Atomizer, Soborg, Denmark

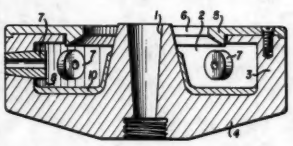
Reissued No. 3,454,226, dated Jul. 8, 1969, Ser. No. 536,326, Mar. 22, 1966.

Original No. Re. 29,083, dated Dec. 21, 1976, Ser. No. 389,637, Aug. 21, 1973. Continuation of Ser. No. 63,356, Aug. 3, 1979, abandoned. Application for reissue Aug. 30, 1982, Ser. No. 413,134

Claims priority, application Denmark, Mar. 26, 1965, 1602/65

Int. Cl.[4] B05B *3/10;* **B04B** *11/00*

U.S. Cl. 239—224 **16 Claims**



12. An atomizer wheel for the atomization of suspension of abrasive materials, comprising a hub, an outer wall part coaxially disposed about said hub and a bottom part connecting said outer wall part with said hub, a ring-shaped cover member detachably connected to said outer wall part, said outer wall part, said hub, said cover member and said bottom part defining between them a toroidal chamber, said cover member having an inner circumference defining together with said hub and unobstructed annular space in communication with said toroidal chamber, said outer wall part being provided with a plurality of regularly shaped holes uniformly distributed around the circumference of the outer wall part, said holes forming the only outlet openings of the wheel, each of said holes being lined with a bushing of wear-resistant sintered material, said holes and said bushings being tapered in direction radially outwardly from said chamber, the inner end of each of said bushings projecting into said chamber while their outer ends are substantially flush with the outside of said outer wall part and an annular plate of wearresistant material embedded in and clamped against the surface of said bottom part, facing said toroidal chamber.

Re. 32,065

MOLDED COLLAPSIBLE SOLUTION CONTAINER

Philip G. Ralston, Jr., Lindon, Utah; Joe A. Miller, Lake Zurich, and Frank Cammarata, III, Palatine, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Original No. 4,049,033, dated Sep. 20, 1977, Ser. No. 621,095, Oct. 9, 1975. Division of Ser. No. 526,092, Nov. 21, 1974. Application for reissue Sep. 18, 1979, Ser. No. 76,691

Int. Cl.[4] B65D *1/02*

U.S. Cl. 604—408 13 Claims

11. A molded collapsible solution container which container defines a chamber-defining body portion wall having an integral neck and shoulder portion at one end thereof and is sealed at its end opposite said one end, the improvement comprising, in combination:

the combination of such shoulder portion and the body portion adjacent the shoulder portion defining, in its normal unstressed state, a structure generally elongated in one transverse dimension, the transverse cross section of said body portion tapering progressively along a major portion of its length to a flat, sealed end portion at said end of the container opposite to said one end, the direction of tapering extending in the direction of the longitudinal axis of the container, to facilitate a uniform manner of flat collapse of said container progressively from said opposite end toward said one end as the contents thereof are withdrawn through said neck portion, when said container is disposed in a neck-downward position, the chamber end opposite to said one end being tapered sufficiently narrowly to permit essentially all of the chamber-defining wall of the body portion adjacent said chamber end to collapse flat together upon withdrawal of the contents;

a pair of generally triangular gusset portions being provided adjacent said shoulder portion at opposite ends of said generally elongated structure, said gusset portions having lines of flexing weakness to facilitate the collapse of said container under normal suction pressure, and opposed side edges of said shoulder portion between said gusset portions each defining a transverse line of folding weakness to facilitate the collapse of said container.

PLANT PATENTS

GRANTED JANUARY 14, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,630

MINIATURE ROSE PLANT 'MEREDITH ANNE'

Cecilia L. D. Bennett, 489 Minot Ave., Chula Vista, Calif. 92010

Filed Aug. 22, 1983, Ser. No. 525,451
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—9 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by rich pink color in the petals with soft pink under surfaces, having a bloom of exhibition-quality form; and further characterized by a plant of vigorous growth habit, easy to propagate from cuttings, with an abundance of flowers borne singly or in sprays of usually 3 to b 5 or more.

5,631

MINIATURE ROSE VARIETY 'MINOCO'

Ernest D. Williams, Dallas, Tex., assignor to Mary Kay Cosmetics, Inc., Dallas, Tex.

Filed Apr. 30, 1984, Ser. No. 605,579
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—9 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by attractive azalea pink flowers with inner petals rolling downward and outer petals reflexing to star-like points and with flower color which remains substantially constant and unfading.

5,632

ROSE PLANT NAMED JELPIROFOR

Robert G. Jelly, Richmond, Ind., assignor to E. G. Hill Co., Inc., Richmond, Ind.

Filed May 15, 1984, Ser. No. 610,820
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—14 1 Claim

1. A new and distinct hybrid tea rose plant, substantially as herein shown and described, particularly distinguished by its large, fully double flowers of white color.

5,633

TEA ROSE NAMED TOBONE

Takeshi Shirakawa, Gamagori, Japan, assignor to Toshio Nakashima, San Leandro, Calif.

Filed Mar. 26, 1984, Ser. No. 596,000
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—19 1 Claim

1. A new and distinct rose plant, substantially as herein shown and described, characterized by the brilliant red-purple color of its very large flowers which are borne on long, strong stems, its year-around abundant production of long-lasting blooms, and its disease resistance.

5,634

ROSE PLANT NAMED JELROCAMI

Robert G. Jelly, Richmond, Ind., assignor to E. G. Hill Co., Inc., Richmond, Ind.

Filed May 14, 1984, Ser. No. 609,782
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—20 1 Claim

1. A new and distinct rose plant of the hybrid tea class, substantially as herein shown and described, particularly distinguished by its large double red flowers, a vigorous growth habit and a good aptitude for forcing.

5,635

TEA ROSE NAMED JELRAFLOKI

Robert G. Jelly, Richmond, Ind., assignor to E. G. Hill Co., Inc., Richmond, Ind.

Filed May 15, 1984, Ser. No. 610,821
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—20 1 Claim

1. A new and distinct hybrid tea rose plant, substantially as herein shown and described, particularly distinguished by its double flowers of medium size and bright red coloration, a vigorous growth habit and a very good aptitude for forcing and wintertime culture.

5,636

ROSE PLANT NAMED JELDANIRAN

Robert G. Jelly, Richmond, Ind., assignor to E. G. Hill Co., Inc., Richmond, Ind.

Filed May 14, 1984, Ser. No. 609,781
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—26 1 Claim

1. A new and distinctive floribunda rose plant, substantially as herein shown and described, particularly distinguished by its abundant inflorescence and its large, double, light pink flowers, a vigorous growth habit, and a good aptitude for forcing.

PATENTS

GRANTED JAN. 14, 1986

ERRATA

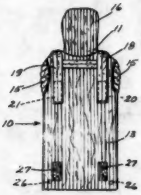
For CLASS	See PATENT NO.
623–022	4,563,778
623–005	4,563,779
525–505	4,564,466
270–021	4,564,470

PATENTS

GRANTED JANUARY 14, 1986

GENERAL AND MECHANICAL

4,563,776
STADIUM COAT
Connie J. Boesen, 801 Bertch Ave., Waterloo, Iowa 50702
Filed Sep. 4, 1984, Ser. No. 646,466
Int. Cl.[4] A41D *3/02*
U.S. Cl. 2—85 **5 Claims**



1. A stadium coat comprising:
a garment having a front, back, sides, top and an open bottom;
the top having closed shoulders thereon and an opening therebetween for receiving a person's head;
a pair of straps, one extending over each shoulder, one end of each said strap being permanently affixed to the back of the coat;
fastener means attached to the other end of each of said straps;
a pair of first fastener receiving means attached to a lower portion of the back for receiving each respective one of said fastener means and hereby holding the coat in a folded position when said fastener means are attached to said pair of first fastener receiving means;
a pair of second fastener receiving means attached to a top portion of said front, one just below each shoulder, for receiving respective ones of said coat is being worn whereby the straps can be stored unobstrusively while the coat is being worn; and
handle means attached at each end thereof to an intermediate portion of each of the straps for providing a handle when the coat is in the folded position thereof.

4,563,777
COMBINATION CARGO PACK
Taekyu Park, c/o York East Merchandise, Inc., 350 Fifth Ave., New York, N.Y. 10118
Filed Jul. 3, 1984, Ser. No. 627,656
Int. Cl.[4] A41D *1/02, 1/00, 3/02*
U.S. Cl. 2—108 **10 Claims**

1. A combination cargo pack comprising a carry pack defining at least one storage compartment, support means secured to the pack including a shoulder strap for carrying the pack, a garment attached to the pack and adapted for storage within the pack, flap closure means on the pack for providing selective access to the garment, said garment being affixed to the pack so as to register the pack in a shoulder strap carrying mode when the garment is

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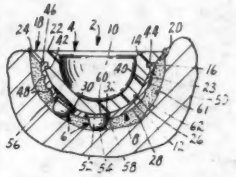
4,563,778
PROSTHETIC ACETABULAR CUP
Karen M. Roche, Stillwater, and Robert M. Eyerly, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 23, 1983, Ser. No. 469,125
Int. Cl.[4] A61F *1/00*
U.S. Cl. 623—22 **7 Claims**

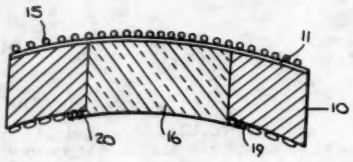


1. An integral, prosthetic acetabular cup assembly comprising:
a. a plastic inner liner comprising:
(1) a substantially hemispherically-shaped inner surface adapted to receive a femoral head prosthesis;
(2) a substantially hemispherically-shaped outer surface; and
(3) a peripheral rim joining the inner surface with the outer surface;
b. a metal backing having a plurality of apertures therein comprising:
(1) a substantially hemispherically-shaped inner surface juxtaposed the outer surface of the liner;
(2) a substantially hemispherically-shaped outer surface; and
(3) a peripheral rim joining the inner surface and the outer surface;
c. a plurality of spacers capable of bonding with a bone cement, each of said spacers having a compressive modulus substantially equal to the compressive modulus of said bone cement and each comprising:
(1) a body passed through an aperture in the backing; and
(2) a head joined to the body;
d. a portion of the periphery of each aperture in the backing formed into a recess dimensioned to receive one of the heads of the spacers whereby the head of each of the spacers is entrapped within one of the recesses when the acetabular cup assembly is assembled; and
e. means for mechanically locking the liner within the backing.

4,563,779
CORNEAL IMPLANT AND METHOD OF MAKING THE SAME
Charles D. Kelman, North Shore Towers, 269 Grand Central Pkwy, Bldg. 3, Floral Park, N.Y. 11005
Filed Jan. 27, 1984, Ser. No. 574,677
Int. Cl.[4] A61F *1/16, 1/24*
U.S. Cl. 623—5 **21 Claims**

1. A corneal implant comprising:
a corneal plug removed from a donor eye and having a posterior surface and an anterior surface spaced from said posterior surface, a membrane covering one of said sur-

faces, and a bore therein extending substantially to said membrane from the other of said surfaces; and



an optically clear artificial plug having dimensions to fit said bore and disposed in said bore.

4,563,780

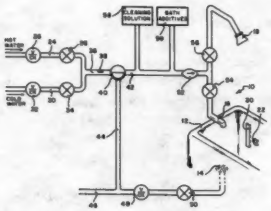
AUTOMATED BATHROOM

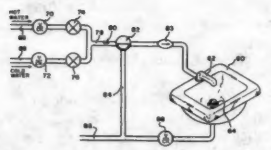
Simcha Z. Pollack, 1561 52nd St., New York, N.Y. 11219

Filed Jun. 29, 1983, Ser. No. 508,826

Int. Cl.⁴ E03C *1/04*

U.S. Cl. 4—192 **8 Claims**





1. In an automated bathroom including:

a water dispenser;

hot and cold water supply means;

mixing means located between said water supply means and said dispenser for mixing the hot and cold water before it is dispensed;

a supply line connected between said mixing means and said dispenser;

a drain line connected to said supply line;

valve means for directing water from said supply line to only the dispenser or only the drain line;

means for sensing the temperature of the water in the supply line after it has been mixed;

control means responsive to said sensing means for operating said valve means such that water from said supply line will be directed to said dispenser when the sensed temperature is within a preselected range and such that water from said supply line will be prevented from being dispensed from said dispenser and will be directed to said drain line whenever the sensed temperature is outside said preselected range.

4,563,781

BATH INSTALLATIONS AND BATH TUBS

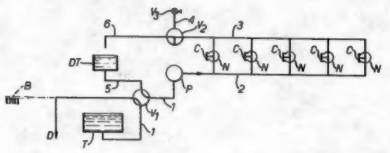
David R. James, Tirley, England, assignor to James Industries Limited, Gloucester, England

Filed Dec. 31, 1984, Ser. No. 687,945

Claims priority, application United Kingdom, Jan. 14, 1984, 8400995

Int. Cl.⁴ A61H *33/02*

U.S. Cl. 4—542 **17 Claims**



1. A method of disinfecting a circulating system of a whirlpool bath tub which comprises at least one nozzle, a circulating pump and associated pipework, said method comprising blanking off or capping the nozzle in such manner that the circulating pump and the nozzle together with the associated pipework form a closed path, connecting a small supply of disinfectant solution to said closed path and circulating the disinfectant solution around the closed path during a disinfection period in order to disinfect the pump, nozzle and associated pipework.

4,563,782

HYDROPNEUMATIC MASSAGE BATH

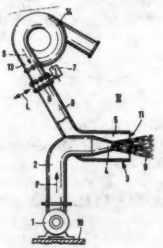
Okko K. Dijkhuizen, Roden, Netherlands, assignor to B. E. M. Wientjes B.V., Roden, Netherlands

Filed Dec. 21, 1983, Ser. No. 563,926

Claims priority, application Netherlands, Jan. 4, 1983, 8300018

Int. Cl.⁴ A61H *33/02*

U.S. Cl. 4—542 **7 Claims**



1. A hydropneumatic massage bath comprising:

a bath tub having high side walls, a bottom and an interior;

at least one pressurized water line having an outlet end terminating in a water jet nozzle for discharging water under pressure;

a member surrounding said outlet end of said water line and defining therewith a chamber, said member having an inlet end connected to an air supply line, such that discharge of said water under pressure from said nozzle creates a reduced pressure in said chamber surrounding said outlet end of said water line and draws air through said air supply line into said chamber to thereby form an air/water mixture, and said member having an outlet end with an orifice for discharging said air/water mixture into said interior of said bath tub; and

interrupter means, in said air supply line at a position upstream of said inlet end of said member, for partially or

completely closing said air supply line at a desired frequency and thereby for supplying said air to said chamber in controlled pulsations at said frequency.

4,563,783

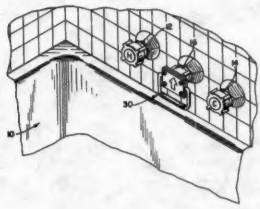
ASSIST HANDLE

James H. Jenkins, 6010 N. 26th St., Arlington, Va. 22207

Filed Aug. 3, 1983, Ser. No. 522,031

Int. Cl.[4] A47K *3/12*

U.S. Cl. 4—576 **1 Claim**



1. In a domestic tub of the type having a knob controlled diverting valve positioned between the knob controlled hot and cold water valves that lie above said tub, the improvement comprising: a safety assist grip comprised of a U-shaped handle with its ends pivotably retained between two plates by a trough in each plate with said plates held to one another by screws, and one of said plates fastened to one of said knobs by a single fastener that also serves to secure the knob to the valve controlled by the knob, whereby a user may facilitate egress from the tub by grasping the handle.

4,563,784

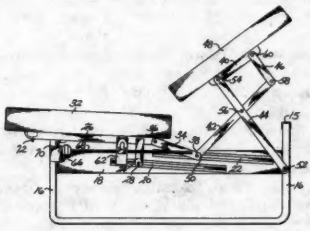
POWER ACTUATED SEAT-BED ASSEMBLY

Fred J. Shrock, P.O. Box 4022, Elkhart, Ind. 46515, and Harley Berkey, Elkhart, Ind., assignors to Fred Shrock, Elkhart, Ind.

Filed Aug. 17, 1984, Ser. No. 641,728

Int. Cl.[4] A47C *17/16, 17/17*

U.S. Cl. 5—37 R **4 Claims**



1. In a convertible seat-bed assembly comprising a base frame, a seat support, and a back support, linkage means connected between said frame and seat and back supports for supporting the seat and back supports for movement between a seat position wherein the seat support is generally horizonal and the back support is generally vertical, the improvement comprising motor means associated with said seat support and independent of said linkage means for urging said seat and back support into a selected one of their said seat and bed positions, wherein a threaded sleeve is pivotally connected to a bracket, which in turn is connected to said seat support, and a gear is associated with said bracket and motor means, said gear threaded within said sleeve and constituting means for shifting said seat support into a selected one of its said seat and bed positions, said sleeve pivotal connection constituting means for allowing said seat support to be raised upwardly when in its said seat position from its front towards said back support, said frame including first and second spaced frame end members whereby raising said seat support when in its seat position exposes a space between said frame and members.

4,563,785

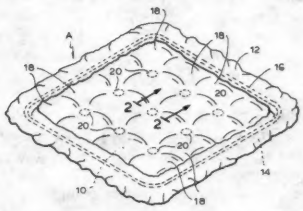
CUSHION WITH SIMULATED BUTTON TUFT AND METHOD FOR MANUFACTURING SAME

Samuel Samelson, Goldsboro, N.C., assignor to EX-CELL Home Fashions, New York, N.Y.

Filed Apr. 5, 1985, Ser. No. 620,400

Int. Cl.[4] A47C *27/14;* D05C *15/00*

U.S. Cl. 5—472 **6 Claims**



1. An article such as a cushion comprising a substantially solid compressible body having first and second surfaces, said body being substantially uninterrupted, having no openings therethrough, flexible sheet material situated along said surfaces to cover said body, a plurality of recessed areas spaced across the article, each of said recessed areas comprising a substantially closed stitch pattern defining the boundary of a substantially circular section of the article, each of said patterns comprising a plurality of stitches, said stitches passing through said body and aligned portions of said sheet material and maintaining the portion of said body within said circular section in a substantially compressed state, so as to simulate a tufted button effect.

4,563,786

SPEED EQUALIZING MEANS AND/OR LAUNDRY MACHINES INCORPORATING THE SAME

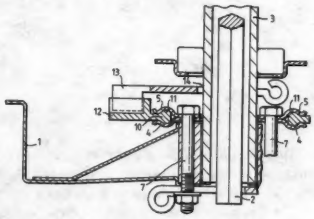
Robert Brunswick, and Warren J. Hancock, both of Melbourne, Australia, assignors to Fisher & Paykel Limited, Auckland, New Zealand

Filed Feb. 27, 1984, Ser. No. 583,602

Claims priority, application New Zealand, Mar. 28, 1983, 203725

Int. Cl.[4] D06F *37/40*

U.S. Cl. 8—159 **6 Claims**



1. A method of equalizing the speeds of rotation of two coaxial rotatable members one of which includes a spin tub and the other of which includes an agitator and associated shaft of a laundry machine comprising the steps of:

interconnecting the rotatable members through interconnecting contacting members spaced radially from the axis of said rotatable members;

transmitting the force from at least one of said contacting members to its respective rotatable member through an energy absorbing/gripping means associated with one of said rotatable members and a sliding means associated with the other of said rotatable members, there being a relative resilience and/or compressibility as between said gripping means and said sliding means;

causing said gripping means to grip said sliding means; and

causing one of said means to slide relative to the other of said means in a manner such that energy resulting from the change in relative speeds necessary to achieve speed equalization of said rotatable members is absorbed by the frictional resistance to rotation between said gripping means and said sliding means.

2. Speed equalizing means for use in equalizing the speeds between two coaxial rotatable members one of which includes a spin tub and the other of which includes an agitator of a laundry machine comprising:

interengageable contacting members spaced radially from the axis of rotation of the rotatable members; and

means for attaching said contacting members to respective rotating members;

at least one of said attaching means comprising an energy absorbing device comprising,

a gripping means, and a sliding means slidingly engaged with said gripping means,

one of said gripping means and sliding means being fixedly attached to a respective one of said rotatable members, and the other of said gripping means and sliding means being fixedly attached to one of said contacting members;

so that relative movement between said rotatable members when said contacting members are interengaged is resisted by friction between said gripping means and sliding means which absorb energy resulting from a change in relative speeds between the rotatable members necessary to effect speed equalization of the rotatable members.

4,563,787

PRODUCTION OF INSOLES

John A. Drew, Barnham, England, assignor to John Drew (London) Limited, Barnham, England

Filed Mar. 2, 1984, Ser. No. 585,551

Claims priority, application United Kingdom, Mar. 8, 1983, 8306294

Int. Cl.[4] A61F *5/14*; A43B *13/38*

U.S. Cl. 12—142 N **3 Claims**

1. A method of producing an insole conforming to a patient's foot comprising the steps of choosing a shoe which fits the foot, providing the shoe with a middle sole unit extending from the heel region to just behind the region of the metatarsal head and being covered by soft expanded plastics, heating at least one blank of thermosoftening expanded plastics for constituting the insole above the softening temperature and inserting it in the shoe, fitting the shoe on the patient's foot, and walking the patient until the insole is below the softening temperature.

4,563,788

TOP DRYING NOZZLE DEVICE FOR VEHICLE WASHING APPARATUS

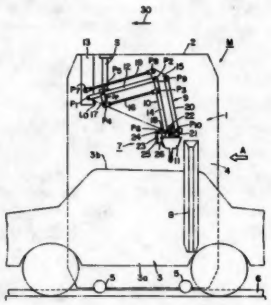
Minoru Kobayashi, 3-1-3-401, Mitsuwadai, Chiba-Shi, Chiba-Ken, Japan

Filed Apr. 9, 1984, Ser. No. 598,455

Claims priority, application Japan, Apr. 8, 1983, 58-51489[U]

Int. Cl.[4] B60S *3/04*

U.S. Cl. 15—312 R **2 Claims**



1. A top drying nozzle device for suspending a top drying nozzle from the top frame of an inverted U-shaped frame member, which frame member is movable forwardly over the body of a vehicle in order to blow off water drops or drips left on the top surface thereof after a water-spray washing operation, and then backward, said nozzle device being suspended so that the top drying nozzle is vertically movable in a position ahead of, in the forward direction of movement of the frame member, a pair of side nozzles provided on the side frames of said U-shaped frame member, said top drying nozzle device comprising:

(1) a top drying nozzle and an air source to which said top drying nozzle is connected;

(2) a link means for supporting the top drying nozzle, said link means comprising:

(a) a first main arm extending substantially horizontally, a supporting plate adapted to be fixed to said frame member, one end of said first main arm being pivotably connected to said supporting plate;

(b) a second main arm extending substantially vertically, the upper end of which is pivotably connected to the other end of the first main arm so as to form an L-shaped link,

(c) a first sub-arm located below and parallel to the first main arm, one end of which is connected to a mid-portion of the second main arm,

(d) a second sub-arm extending parallel to the second main arm, a lower end of which is pivotably connected to the other end of the first sub-arm, and an upper end of which is pivotably connected to a mid-portion of the first main arm,

(e) a first supplementary arm located above and parallel to the first main arm and forming a first parallel link with the first main arm, one end of which first main arm is pivotably connected to said supporting plate,

(f) a second supplementary arm located parallel to the second main arm and forming a second parallel link with the second main arm,

(g) a lower horizontal connecting plate pivotably connecting the lower ends of the second main arm and the second supplementary arm to each other, and

(h) an upper connecting plate on which the other end of said first supplementary arm, the connecting point of the first main arm and the second main arm, and the upper end of the second supplementary arm are connected;

said first and second main arms and said first and second sub-arms forming a pantagraph mechanism for moving the lower horizontal connecting plate vertically; and

(3) a driving means connected to the connecting point of the first and second sub-arms for moving said connecting point vertically,

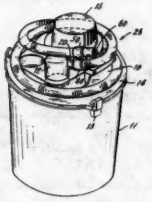
said top drying nozzle being pivotally supported on said lower horizontal connecting plate so as to swing rearwardly and upwardly relative to the forward direction of movement of said frame member, away from said connecting plate about an axis extending transversely of the direction of movement of said frame member, and an extensibie connecting member connected between said top drying nozzle and said lower horizontal connecting plate urging said top drying nozzle to the horizontal position against said connecting plate.

4,563,789

HOSE END HOLDER

Robert C. Berfield, Jersey Shore, Pa., assignor to Shop-Vac Corporation, Williamsport, Pa.

Filed Apr. 19, 1984, Ser. No. 602,174
Int. Cl.[4] A47L *9/00*
U.S. Cl. 15—323 **4 Claims**



1. A hose end holder for holding a hose of a vacuum cleaner coiled upon itself, wherein the hose has a proximal end portion and has a distal end; a nipple; the proximal end portion of the hose being mounted over the nipple and being fitted thereon; a tubular member around the exterior of the proximal end portion of the hose and over the nipple for additionally securing the hose on the nipple; a detent inside the tubular member for engaging the hose inside the the tubular member and for preventing separation of the hose and the tubular member; the tubular member supporting a further hose support which is integral therewith and which is sized and shaped to surround and receive and retain the distal end of the hose, the further hose support having an axis substantially parallel to the axis of the tubular member and the nipple.

4,563,790

HOSE ATTACHMENT STRUCTURE FOR UPRIGHT VACUUM CLEANER

Paul M. Clark, St. Paul, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

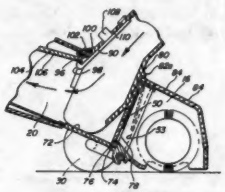
Filed Apr. 18, 1984, Ser. No. 601,542
Int. Cl.[4] A47L *5/32*
U.S. Cl. 15—337 **20 Claims**

1. In an on-the-floor cleaning suction cleaner of the type having a suction-generating means, a dirt collecting member and a cleaner head hood defining a hose attachment port, a chamber for a rotary agitator and an air passageway for communicating dirt laden air between the chamber and the dirt collecting member, an improved structure for converting the suction cleaner to off-the-floor operation comprising:

a converter connected to a suction hose for insertion into the hose attachment port;

a door pivotally mounted with respect to the cleaner head hood and movable between a first position wherein the door seals the hose attachment port and a second position wherein the door fully blocks air communication between the chamber and the air passageway; and

means on the converter engageable directly against the door for deflecting the door towards the second position as the converter is inserted into the hose attachment port; and



means on the converter directly rigidly engaging the door and bearing the door into the second position to positively retain the door in a blocking position between the chamber and the air passageway,

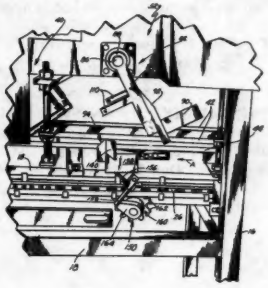
whereby suction developed by the suction-generating means is realized entirely at the hose attachment port with the door in the second position.

4,563,791

WING CUTTER APPARATUS

Eugene G. Martin, New Holland, and Harold C. Martin, Lancaster, both of Pa., assignors to Favorite Manufacturing, Inc., New Holland, Pa.

Filed Jan. 18, 1984, Ser. No. 572,205
Int. Cl.[4] A22C *21/00*
U.S. Cl. 17—11 **25 Claims**



1. A cut-off apparatus for severing a wing portion from a poultry carcass, said apparatus comprising: a frame; a poultry carcass support on said frame for supporting a carcass in a generally horizontal plane; a wing positioning means on said frame and adjacent said support for locking the wing in position to be severed, said wing positioning means including a wing stop; a wing holding means supported on said frame above said wing positioning means for engaging the wing portion and holding the wing portion against said positioning means; a knife on said frame for severing the wing portion from the carcass; a knife drive means connected to said knife for moving said knife to sever the wing portion after said wing holding means is engaging said wing portion and; wing positioning drive means operatively engaging said wing positioning means for moving said wing positioning means between an operative position and an inoperative position.

4,563,792

PROCESS OF MANUFACTURING TUBULAR WRAPPERS FROM A CONTINUOUS WEB OF PLASTIC MATERIAL SHEETING

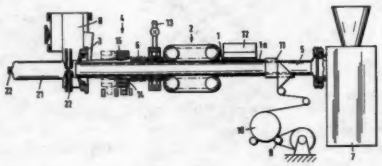
Herbert Niedecker, Am Ellerhang 6, D 6240 Königstein 2, Fed. Rep. of Germany

Filed Sep. 30, 1983, Ser. No. 537,755

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1982, 3236553

Int. Cl.[4] A22C *11/02*

U.S. Cl. 17—33 2 Claims



1. In an apparatus for making sausages comprising means for supplying a continuous web of plastic sheet to a filling tube and for forming said sheet into a continuous tubular wrapper before it leaves the filling tube, means for discharging sausage meat through the tube and into the tubular wrapper and for closing the filled wrapper at spaced locations to form sausages, the improvement which comprises means for sensing the amount of unfilled tubular wrapper on the filling tube and controlling the supplying and forming means and the discharging and closing means in response thereto, wherein the sensing means includes a stop in contact with the continuous tubular wrapper, means mounting the stop for longitudinal displacement downstream along the filling tube in response to a continuing supply of tubular wrapper, means urging the stop upstream, and switches located longitudinally along the filling tube and actuatable by the stop, wherein the switches are operatively connected with the discharging and closing means, and the supplying and forming means whereby the amount of unfilled tubular wrapper upstream of the stop determines the temporary position of the stop which in turn controls the activation of the supply of tubular wrapper.

4,563,793

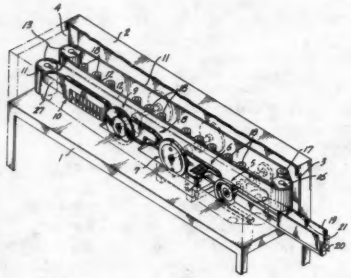
FRESH SALMON-CLEANING MACHINE

Robert M. Ryan, 312 NW. 40th St., Seattle, Wash. 98107

Continuation of Ser. No. 347,840, Feb. 11, 1982, abandoned. This application Oct. 23, 1984, Ser. No. 663,873

Int. Cl.[4] A22C *25/14*

U.S. Cl. 17—58 13 Claims



1. In a machine for cleaning beheaded fish including fish-cleaning apparatus having arranged sequentially a rotating slitter disc for slitting open the belly of the fish, and an eviscerating gutter for eviscerating the fish, a rotating blooder disc for cutting open the kidney membrane, and belly cavity scouring means to clean the belly cavity; and elongated transport means having two conjointly moving endless belts with adjacent substantially horizontal stretches disposed in substantially parallel vertical planes spaced apart to hold a fish therebetween and move it through the fish-cleaning apparatus beheaded and first in belly down attitude; the improvement comprising:

a slitter disc guard overlying the slitter disc and having a portion extending generally tangentially beyond the slitter disc and in the path of the portion of the belly cavity below the viscera for protrusion into the belly cavity along the belly wall before the belly wall of the fish is engaged by the slitter disc, thereby holding the belly wall for engagement by the slitter disc, said guard being engageable by the tail end of the belly cavity adjacent to the vent of the fish to lift the tail portion of the fish by riding up on said guard to prevent the slitter disc from cutting the bottom portion of the fish tailward of the belly cavity;

a projection projecting from the gutter toward the slitter disc for penetration into the upper portion of the belly cavity adjacent the backbone for scooping the viscera out of the cavity;

said blooder disc being positioned to engage the belly cavity of the fish and having a cross-sectional profile adapted for supporting the side and upper walls of the belly cavity; and

a blade carried by the blooder disc and having a sharp edge portion projecting beyond the periphery of the disc for cutting open the kidney membrane in the upper portion of the fish cavity supported by said rotating disc.

4,563,794

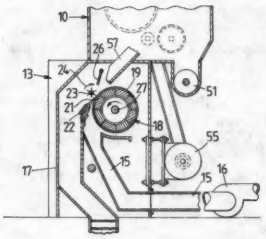
SELF-CLEANING ROLLER GIN

William D. Beeland, Columbus, Ga., assignor to Lummus Industries, Inc., Columbus, Ga.

Filed Jun. 7, 1984, Ser. No. 618,234

Int. Cl.[4] D01B *1/06*

U.S. Cl. 19—48 R 3 Claims



1. In a roller gin of the kind having a motor operated ginning roll and a knife cooperable therewith to remove lint from seed cotton, electromechanical means to reverse the direction of rotation of the roll, thereby to remove from the knife at least some of the lint, trash or the like which accumulates on the knife during ginning, said electromechanical means comprising:

(a) resetable timer means for initiating removal of said lint, trash or the like at predetermined intervals;

(b) delay means operably connected to said resetable timer means and responsive thereto for deenergizing said motor at a predetermined time;

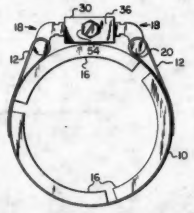
(c) a time delay relay responsive to said delay means operably connected to said motor for energizing said motor for rotation in a reverse direction for a predetermined period; and

(d) means responsive to said time delay relay for resetting said resetable timer means.

4,563,795
CONDUIT CLAMP

Paul J. E. Fournier, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Oct. 19, 1984, Ser. No. 662,612
Int. Cl.[4] B65D *63/00*
U.S. Cl. 24—19 **5 Claims**

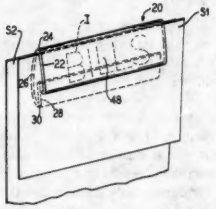


1. A circumferential conduit clamp operable by an actuator rotatable about an axis substantially parallel to the longitudinal axis of the conduit being clamped and characterized by its high strength and heavy duty construction comprising, in combination, a generally circular flexible tension band defining a central longitudinal axis and having ends, a rigid band anchor attached to each band end, said anchors being disposed adjacent to and displaceable toward each other, each anchor including a band attachment end attached to a band end and an outer end, said anchor outer ends each comprising an enlarged head having a radially inwardly facing side and a radially outwardly facing side, a radially extending first cam surface defined upon each head side, said cam surfaces being radially aligned and obliquely disposed to the length of said band axis, a U-shaped bracket having a base and parallel spaced legs extending from said base, said anchor heads being movably located between said bracket legs, a rigid slide receivable between said bracket legs, second cam surfaces defined upon said slide adjacent with an engaging said first cam surfaces, and a slide actuator mounted upon said bracket selectively translating said slide within said bracket to move said second cam surfaces across said first cam surfaces to draw said band anchors toward each other and contract said band.

4,563,796
RETAINER WITH COACTING LEGS

John S. Kettlestrings, 2235 Stonegate La., Wheaton, Ill. 60187, assignor to John S. Kettlestrings, Wheaton, Ill. and A. Edward Maass, Minneapolis, Minn.

Filed Nov. 14, 1983, Ser. No. 551,039
Int. Cl.[4] F04B *10/00*
U.S. Cl. 24—563 **9 Claims**



1. A retainer for use in holding sheets of material comprising:

a retainer body fabricated of a resilient memory-type material having,

a back portion,

a first leg portion connected by a bight to one edge of said back portion,

a second leg portion connected by a bight to an opposite edge of said back portion,

said first leg formed at a small acute angle to said back portion and having a length less than the distance between said two edges,

said second leg formed at an acute angle to said back portion greater than said small acute angle and having a length less than the distance between said two edges,

first and second legs projecting above the same face of said back and the combined length of said legs being greater than the distance between said two edges,

said second leg being manipulated to be tucked under said first leg such that said first leg is biased inwardly toward said second leg and second leg is biased outwardly toward said first leg,

said first leg having an inwardly projecting lip extending the width of the leg along the end thereof which engages the second leg, and

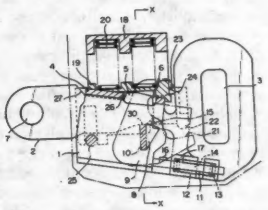
said second leg having an end engagable with said first leg at a point spaced from said lip

whereby, gripping action is provided between said first and second legs at two separate places.

4,563,797
SAFETY BELT BUCKLE

Osamu Kawai, Fujisawa, Japan, assignor to NSK-Warner K. K., Tokyo, Japan

Filed Nov. 2, 1984, Ser. No. 667,849
Claims priority, application Japan, Nov. 9, 1983, 58-172361[U]
Int. Cl.[4] A44B *11/25*
U.S. Cl. 24—641 **9 Claims**



1. A safety belt buckle comprising a tang having a protrusion thereon at one side thereof, a base into which said tang is inserted, said base having a cut-away in a wall portion thereof that receives said protrusion of said tang, a lever member pivotally mounted on the base, said lever member being capable of assuming a latched position at which said lever member is oriented substantially perpendicular to the insertion direction of said tang into said base and engages a side of said tang opposite to the first-mentioned side to prevent movement of said protrusion out of said cut-away in a direction substantially perpendicular to the tang insertion direction, and a non-latched position in which said lever member is oriented in a direction different from its orientation in the latched position so as to permit movement of the protrusion out of said cut-away in a direction substantially perpendicular to the direction of tang insertion, holding means for holding said lever member in said latched position, operating means for moving said holding means to release said lever member from said latched position and for moving said lever member from said latched position to said non-latched position, and push-out means responsive to the movement of said lever member from said latched position to said non-latched position for pushing said protrusion of said tang out of said cut-away.

4,563,798

CORDUROY CUTTING MACHINE

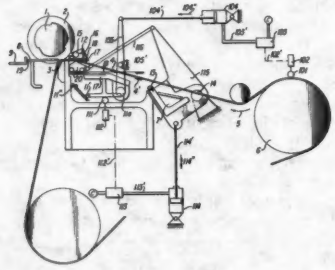
Albert Vroomen, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Franz Müller GmbH & Co., Monchen-Gladbach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 451,890, Dec. 21, 1982, abandoned. This application Feb. 19, 1985, Ser. No. 702,812

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1981, 3150734

Int. Cl.[4] D06C *13/08*

U.S. Cl. 26—10 C 2 Claims



1. Corduroy cutting machine, comprising means for moving a fabric web in a given travel direction, a shaft, a plurality of circular knives disposed adjacent each other on said shaft for cutting open floating wefts of the fabric web being movable along said given travel direction, a plurality of needles being normally novable in a given working area, said needles having points and having longitudinal slots formed therein for receiving portions of said knives at a cutting edge, means for inserting said needles into the floating wefts to be cut open in a direction opposite said given travel direction, upper and lower contact strips being respectively disposed above and below said needle points, means responsive to contact between at least one of said needles and at least one of said contact strips for stopping the cutting machine, said needles and said lower contact strips defining a working plane onto which the fabric is guidable from below over said lower contact strip to said cutting edge, means for lowering said lower contact strip from said working plane, a rear table supporting the fabric web in said working plan upstream of said contact strips as seen in said given travel direction, means for lowering said rear table with the fabric web from said working plane upon actuation of the stop motion, a needle supporting table being movable along said working plane, a collecting rail being associated with said upper contact strip for prohibiting an advance of said needles from the cut fabric web substantially beyond said given working area of said needle movement and means for moving said needle supporting table below said needles when said rear table is lowered and said collecting rail prohibits the advance of said needles.

4,563,799

AIR JET NOZZLE FOR TREATMENT OF YARNS

Peter Dammann, Remscheid, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Filed Oct. 7, 1983, Ser. No. 539,929

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1982, 3237273; Jun. 3, 1983, 3320180

Int. Cl.[4] D02G *1/16*

U.S. Cl. 28—272 16 Claims

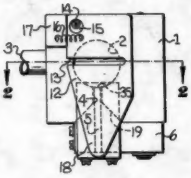
6. An air jet nozzle adapted for the entanglement of a running multifilament yarn and the like, and comprising

a body member,

a cylindrical yarn passageway extending through said body member and defining an inner cylindrical wall,

an air inlet channel formed in said body member and radially communicating with said yarn passageway,

a yarn guide plate mounted to said body member at at least one end of said yarn passageway, with such guide plate transversely overlying the associated end of said yarn passageway and including an elongate slot which is aligned with the passageway so that the axis of the passageway passes therethrough, and with said slot extending



in a direction parallel to the direction of said air inlet channel, and

means mounting said yarn guide plate to said body member so as to permit adjustment in a direction perpendicular to the direction of said slot in such guide plate, said mounting means including means permitting pivotal movement of said guide plate about an axis parallel to the axis of said yarn passageway so as to permit such guide plate to be selectively withdrawn from its position overlying the associated end of said yarn passageway.

4,563,800

ELECTRODE TOOL STORAGE MAGAZINE

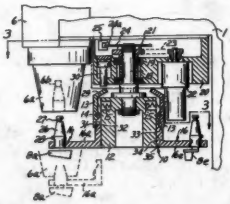
Benno I. Bonga, Crans, Switzerland, assignor to Ateliere des Charmilles, S.A., Geneva, Switzerland

Filed Aug. 3, 1983, Ser. No. 519,834

Claims priority, application Switzerland, Aug. 6, 1982, 4741/82

Int. Cl.[4] B23Q *3/157*

U.S. Cl. 29—26 A 4 Claims



1. In an EDM apparatus for effecting a machining operation on a workpiece, said EDM apparatus being provided with an automatic tool changer, said tool changer comprising a rotatable and indexable turret for supporting a plurality of electrode tools, and said EDM apparatus having a reciprocable machining head having a tool holder mounted on the end thereof, the improvement comprising a support member permanently attached to each of said electrode tools, said tool support member having a portion adapted to be removably attached to said turret, means for removably attaching said tool support member to said turret and for individually holding each said tool support member on said turret, said turret having a mounting surface for said tool support member portion, said mounting surface being located outside of the space occupied by said tool support member during reciprocation of said machining head with said electrode tool and tool support member attached to said tool holder, wherein said attaching and holding means

comprise a clamping lever for each said tool support member, said clamping lever having pawl means co-operating with engaging means disposed on said tool support member portion for attaching said tool support member portion to said turret mounting surface during a retraction of said machining head from the workpiece causing engagement of said tool support member portion under said pawl means.

4,563,801

METHOD OF REINFORCING THE EDGES OF IMPELLER VANES OR THE LIKE

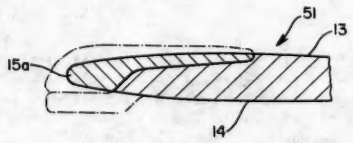
Jürgen Schill, Weisenheim; Werner Rupp, Frankenthal; Werner Schaff, Frankenthal/Flomersheim, and Jörg Urban, Ludwigshafen, all of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Continuation of Ser. No. 529,555, Sep. 6, 1983, abandoned. This application Jun. 27, 1985, Ser. No. 750,044

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, 3235310

Int. Cl.[4] **B21K** *3/04*; **B23P** *15/02, 15/04*

U.S. Cl. 29—156.8 B **6 Claims**



1. A method for reinforcing a metallic blank having a first side, a second side and an edge therebetween, particularly a blank which is to constitute or is to be converted into a vane of a centrifugal pump or like fluid machine wherein one side is to be a suction side and the other side a pressure side, said method comprising the steps of

(a) forming one of said sides of the blank with a pair of neighboring recesses, one of which is deeper than the other and immediately adjacent the edge of the blank;

(b) filling both recesses with an armoring material, said filling step including fusing the armoring material to the material of the blank; and,

(c) removing at least a substantial portion of the blank defining the deeper recess, as well as removing some of the armoring material, so that the blank is provided with a fresh edge which is defined solely by the armoring material.

4,563,802

METHOD AND APPARATUS FOR THE PRODUCTION OF EXHAUST PIPES FOR AUTOMOTIVE VEHICLES

Hubertus Benteler, Bielefeld, and Egon Olszewski, Paderborn-Elsen, both of Fed. Rep. of Germany, assignors to Benteler-Werke AG, Paderborn, Fed. Rep. of Germany

Filed May 6, 1980, Ser. No. 147,255

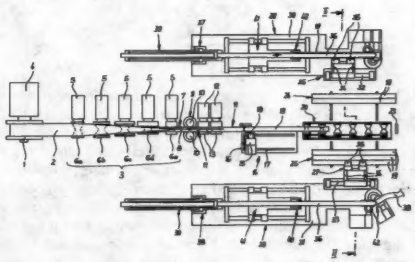
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928120

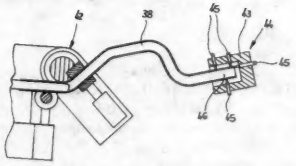
Int. Cl.[4] **B23K** *31/06*; **B21D** *7/024*

U.S. Cl. 29—157 R **4 Claims**

1. A method for the continuous production of exhaust pipes for automotive vehicles comprising the steps of bending and welding a continuous metal strip to an endless pipe strand while continuously moving the strand in an axial direction with a predetermined speed; straightening the strand; stepwise severing said pipe strand into pipe sections of predetermined length while the strand continuously moves at said predetermined speed; and thereafter alternatingly transferring the cut pipe sections into two bending apparatus for bending the pipe sections into exhaust pipes with predetermined bends, and wherein the two bending apparatus are respectively located to opposite sides of a path along which the cut pipe sections are moved, bending said pipe sections into predetermined bends having exhaust pipe configurations; and further including the step of gauging one end of the bent pipe section while still held by the bending apparatus by moving a gauging head provided with feeler means over said one end to indicate that the pipe dimensions are within predetermined tolerances.

2. In an apparatus for the continuous production of exhaust pipes for automotive vehicles, a combination, comprising means for continuously moving an elongated metal strip with a predetermined speed along a predetermined path extending in the longitudinal direction of the strip; forming and welding means along said path for continuously forming and welding said strip during the movement thereof with said predetermined speed, depending on the maximum obtainable welding speed, into a continuous pipe strand; severing means downstream of said forming and welding means for cutting said pipe strand into sections of predetermined length during continuous





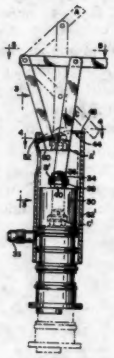
advance of said pipe strand; two bending means including an elongated mandrel for bending the successively produced pipe sections into exhaust pipes, said two bending means being arranged to opposite sides of said path and including transfer means for alternatingly transferring successive pipe sections respectively to the two bending means; control means coordinated with the bending means for gauging the dimensions at the free end of a finished tube section while the latter is still held by said bending means, said control means including a gauging head provided with a plurality of feelers adjusted to the desired dimension at the end of the bent tube section, means for moving said gauging head between a first position in which said gauging head receives said end of said bent tube section and a second position distant from said end, guide means for guiding said moving means along a rectilinear path, and means for adjusting the position of the guide means about two axes normal to each other and for arresting said guide means in any adjusted position.

4,563,803

VALVE REMOVING TOOL

John Dimoff, 7723 Ridgewood La., Burr Ridge, Ill. 60525

Filed Apr. 22, 1983, Ser. No. 487,506
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—213 R 3 Claims



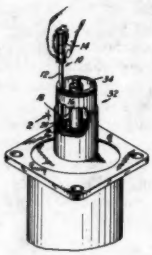
1. A tool for removing an article defining a projection from a hollow casing comprising an elongate handle having a distal end and a proximate end; a fulcrum member having a first end and a second end; means rotatably connecting the distal end of said handle to the first end of said fulcrum member; a lever arm having a first end and a second end; means rotatably connecting the first end of said lever arm to an intermediate portion of said handle; means secured to the second end of said lever arm for engaging the upper end of the article within the casing comprising a member having at its upper end a cut-away section for receiving the second end of said lever arm and a recess at its lower end for receiving said projection; a bar connected to the second end of said fulcrum member and removably connectable to said casing, said bar defining an opening through which the lever arm can pass to interconnect the handle to the article in said casing, whereby as the handle is moved downwardly the article is moved relative to said casing.

4,563,804

AIR CONDITIONING COMPRESSOR RETAINING RING REMOVER TOOL

Thomas W. Alesi, New Fairfield, Conn., assignor to Draf Industries, Inc., Bedford Hills, N.Y.

Filed Mar. 4, 1983, Ser. No. 472,409
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—229 8 Claims



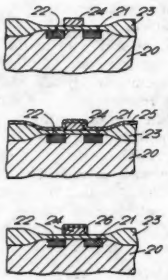
1. A tool for removing a C-ring formed with a hole in at least one end thereof, comprising a shaft, handle means attached to said shaft for aiding in the displacement thereof and a pin dimensioned for receipt within said C-ring hole and projecting from an end of said shaft from a position spaced from the axis of said shaft, said pin being angled relative to said axis, whereby said pin is adapted to engage said C-ring hole for removal of the C-ring, said shaft being formed with a groove extending about the circumference of the shaft in the surface thereof extending in a plane which extends substantially normally to the axis of said shaft, said groove being positioned in a region adjacent to the end of said shaft supporting said pin, whereby said groove is adapted to engage the inner edge of said C-ring as a secondary removal means following the use of said pin.

4,563,805

MANUFACTURE OF MOSFET WITH METAL SILICIDE CONTACT

Peter D. Scovell, Chelmsford; Paul J. Rosser, and Gary J. Tomkins, both of Harlow, all of United Kingdom, assignors to Standard Telephones and Cables, PLC, London, England

Continuation of Ser. No. 587,466, Mar. 8, 1984, abandoned. This application Jun. 24, 1985, Ser. No. 748,135
Int. Cl.[4] H01L *21/385, 21/443*
U.S. Cl. 29—571 4 Claims



1. In a method of manufacturing an MOS semiconductor device which includes the two steps of providing a polysilicon gate element by etching a polysilicon layer disposed on an oxide layer which is itself disposed on a silicon substrate and of subsequently oxidizing the thus processed silicon substrate, said source and drain regions being disposed under said oxide layer and aligned with said gate element, the improvement consisting of performing the following additional steps between the above said two steps, said additional steps consisting of depositing a metal layer to extend over the entire exposed surface of the polysilicon gate element including side wall portions thereof and over the portions of the oxide layer exposed by said polysilicon etching step, performing an annealing step in which the metal and the polysilicon are caused to interdiffuse over said entire polysilicon gate element surface whereby to form a metallic silicide layer which extends up to said oxide layer at least at said side wall portions, and removing by etching the unreacted metal on the oxide layer.

4,563,806

METHOD FOR THE MANUFACTURE OF A DISPLAY SCREEN BASED ON THIN-FILM TRANSISTORS AND CAPACITORS

Pierre Coissard, 31 residence Corlay; Joseph Richard, 33 Lotissement Keranroux, and Francois Morin, le Carpont-Lanmerin, all of 22300 Lannion, France

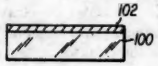
PCT No. PCT/FR83/00177, § 371 Date May 7, 1984, § 102(e) Date May 7, 1984, PCT Pub. No. WO84/01239, PCT Pub. Date Mar. 29, 1984

PCT Filed Sep. 12, 1983, Ser. No. 610,490

Claims priority, application France, Sep. 14, 1982, 82 15499

Int. Cl.[4] H01L *21/203*

U.S. Cl. 29—571 2 Claims



1. Method for the manufacture of an active matrix display screen formed from points constituted in each case by a thin file transistor and a capacitor, said method comprising the formation of a lower wall (**10**) carrying the first plates of the capacitors and thin-film transistors and an upper wall (**24**) covered with a counter-electrode (**26**) forming the second plates of the capacitors, characterized in that for forming the lower wall, the following operations are used:

deposition of a layer (**102**) of a first transparent, conductive material on an insulating substrate (**100**),

first photogravure applied to this first layer to constitute the rows and columns of blocks (**106**) forming one of the plates of the future capacitors, each block being connected to a projection (**108**), said first photogravure also leaving columns (**104**) of the first conductive material, said columns being positioned between the block columns,

deposition of a hydrogenated, amorphous silicon layer (**11**) on the entity,

deposition of an insulating layer (**112**),

deposition of a layer (**114**) of a second conductive material, and

second photogravure applied to the silicon layer - insulating layer - conductive layer assembly, said second photogravure leaving behind the rows (**116**) of the second conductive material, said rows passing above the projections (**108**), the overlap areas of a row (**116**) with a column (**104**) and a projection (**108**) defining the source and drain of a transistor, the grid of said transistor being constituted by that part of the row (**116**) located between the projection (**108**) and the column (**104**).

4,563,807

METHOD FOR MAKING SEMICONDUCTOR DEVICE UTILIZING MOLECULAR BEAM EPITAXY TO FORM THE EMITTER LAYERS

Hiroyuki Sakai, Moriguchi; Toyoki Takemoto, Yawata; Kenji Kawakita; Tsutomu Fujita, both of Hirakata, and Atsuko Akiyama, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 4, 1984, Ser. No. 596,592

Claims priority, application Japan, Apr. 6, 1983, 58-60145

Int. Cl.[4] H01L *21/225, 21/285*

U.S. Cl. 29—591 12 Claims

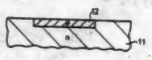
1. Method for making a semiconductor device comprising at least the steps of;

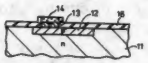
forming a first emitter layer of single-crystalline semiconductor;

forming a second emitter layer of polycrystalline or amorphous semiconductor on said first layer, said first and second emitter layers being continuously formed by means of molecular beam epitaxy without forming an oxide film therebetween;

forming an anti-oxidation layer on said second emitter layer;

forming a pattern by etching said first and second emitter layers; and





forming an oxide layer for at least surrounding side portions of said first and second emitter layers by use of said anti-oxidation layer as a mask.

4,563,808

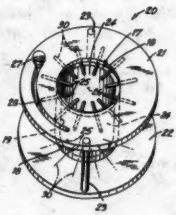
METHODS OF PRODUCING SLOTLESS AND TOOTHLESS WOUND STATOR

Robert J. Lender, Weston, Conn., assignor to Edo Corporation, College Point, N.Y.

Filed Jul. 20, 1984, Ser. No. 632,667

Int. Cl.[4] H02K *15/02*

U.S. Cl. 29—596 11 Claims



1. A method of producing a slotless and toothless wound stator for an electrical machine, comprising providing an iron stator cylinder having a smooth circumferential inner wall without slots or teeth between opposite ends of the stator cylinder, positioning temporary teeth solely at and about the circumference of opposite ends of the stator cylinder and extending inwardly toward the axis of the cylinder, positioning an electrical winding without supporting form upon the smooth inner cylinder wall and between and about the inwardly extending temporary teeth at the opposite ends of the cylinder, inserting an expandable retaining means into the stator cylinder central opening from one end thereof, expanding the retaining means within the stator cylinder to press the electrical windings against the smooth inner wall of the stator cylinder, and removing the temporary teeth to leave a slotless and toothless wound stator from end to end.

4,563,809

FUSE WITH CENTERED FUSE FILAMENT AND METHOD OF MAKING THE SAME

Conrad M. Reeder, Prospect Heights, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.

Filed Dec. 9, 1982, Ser. No. 448,313
Int. Cl.[4] H01H *69/02*
U.S. Cl. 29—623 4 Claims

1. A method for manufacturing electrical cartridge fuses having an insulating housing with a linear passageway therethrough for accommodating an axially disposed fuse filament therein, and end walls on the housing having centered holes therein through which said fuse filament extends, said method comprising:

providing a pair of solid resilient members configured to fit into said housing passageway;

securing said members within opposite end portions of said housing passageway;

providing a length of a fuse filament greater than the length of said housing;

passing the piercing front end of a needle completely through and beyond the housing so it passes through said end wall holes and pierces said resilient members; and

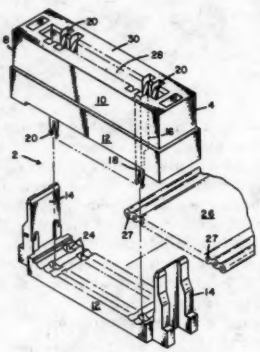
causing said fuse filament to traverse the path through said fuse formed by the needle and removing the needle from the housing so that the fuse filament extends through and beyond the ends of the fuse, said pair of resilient members collapsing around and resiliently capture portions of said fuse filament and hold the same taut and centered in said housing.

4,563,810

ELECTRICAL CONNECTOR TRANSFER NEST

Daniel T. Adlon, Swatara; Edward A. Bianchi, Hummelstown; Neil F. College, Elizabethtown, and George D. Reuss, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 25, 1985, Ser. No. 704,837
Int. Cl.[4] H01R *43/04*
U.S. Cl. 29—749 17 Claims



1. A transfer nest for an electrical connector having electrical terminals with conductor receiving portions projecting from a face of the connector, the nest comprising:

a frame adapted for attachment to connector transfer means for transport thereby;

a connector support and a counter-abutment mounted for relative movement towards and away from one another in the frame;

return means urging the connector support and the counter-abutment relatively away from one another;

means for retaining the connector between the connector support and the counter-abutment with said face directed towards the latter;

means on the transfer nest for guiding a multi-conductor flat cable into a position parallel with said face and between said face and the counter-abutment;

means on the counter-abutment for stuffing the conductors of said cable into said wire receiving portions as a result of relative movement towards one another of the connector support and the counter-abutment; and

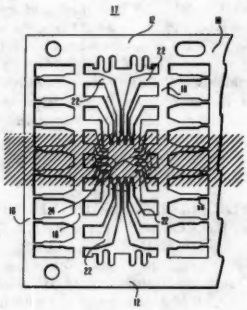
means for releasing the connector from the nest and upon subsequent relative movement of the connector support and the counter-abutment away from one another under the action of the return means.

4,563,811

METHOD OF MAKING A DUAL-IN-LINE PACKAGE

Benjamin H. Cranston, Hopewell Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Oct. 28, 1983, Ser. No. 546,714
Int. Cl.[4] H01R *43/00*
U.S. Cl. 29—827 3 Claims



1. A method for fabricating a dual-in-line package having internal leads thermocompression bonded to a ceramic substrate and external leads depending from a body portion molded about the ceramic substrate, the method comprising the steps of:

indexing an elongated, hard metal strip, having a soft metal stripe through the central portion thereof, through a punching apparatus;

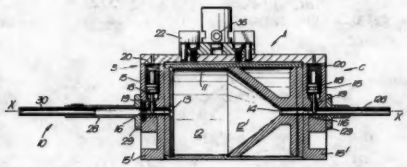
punching the strip to form a pattern of internal and external leads wherein the internal leads are formed of the soft metal and the external leads are formed of hard metal; and

thermocompressively bonding the soft internal leads to a metallized ceramic substrate.

4,563,812
FILAMENT LAYING APPARATUS AND A METHOD OF FABRICATING A HARNESS

Mark Goddard-Watts, Basingstoke, England, assignor to British Aerospace Public Limited Co., London, England

Filed Feb. 14, 1984, Ser. No. 580,140
Claims priority, application United Kingdom, Feb. 15, 1983, 8304103
Int. Cl.[4] H01R 43/00; B23P 19/00
U.S. Cl. 29—857 13 Claims



1. In filament laying apparatus including arm means movable in accordance with a predetermined programme of commands to move along a selected path, a filament laying tool including attachment means for attachment to said arm means, a main body portion having a generally closed internal storage chamber and an inlet and an outlet disposed in opposed end regions of said storage chamber for filament to pass into and out of said chamber, hollow elongate probe means attached to said main body portion adjacent said outlet and in communication therewith, stop means operatively associated with said probe means and actuable to prevent the passage of filament therethrough, the storage chamber being shaped such that filament having entered said storage chamber via said inlet is caused to pass through said probe means via said outlet and that on actuation of said stop means, further filament entering into said chamber is caused to accumulate therein in compact condition.

9. A method of fabricating a filament harness comprising the steps of:

(i) selecting a filament laying tool having a main body portion having a generally closed internal storage chamber and an inlet and an outlet disposed in opposed end regions of said chamber for filament to pass into and out of said chamber, hollow elongate probe means attached to said main body portion adjacent said outlet and in communication therewith, and stop means associated with said elongate probe means and operable to prevent the passage of filament therethrough,

(ii) initially feeding a free end portion of a predetermined length of filament via said inlet port to pass into said storage chamber and thence to protrude from the free end of said hollow elongate probe means,

(iii) actuating said stop means to prevent further movement of said filament through said hollow elongate probe means while continuing to feed filament into said chamber via said inlet to be stored therein in compact form,

(iv) moving said tool to a position adjacent a first station,

(v) attaching the free end protruding from said hollow elongate probe means to a predetermined attachment point,

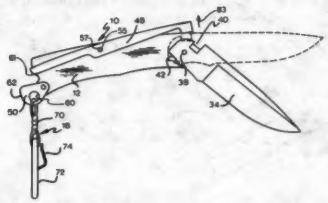
(vi) moving said tool along a predetermined path to a position adjacent a second station, and

(vii) releasing the other free end of the filament adjacent a further attachment point.

4,563,813
CAM LOCK KNIFE STRUCTURE

Charles K. Fortenberry, Barlow Lake, Box 102, Woodville, Tex. 75979

Filed Apr. 9, 1984, Ser. No. 597,913
Int. Cl.[4] B26B 1/04
U.S. Cl. 30—161 1 Claim



1. A cam lock knife structure, comprising:

(a) a main handle assembly;

(b) a knife blade assembly pivotally mounted to one end of said main handle assembly and movable from a folded, storage position to an open, usage position;

(c) a cam lock assembly including an actuator lever member pivotally connected to said main handle assembly and a cam assembly pivotally mounted at another end of said main handle assembly;

(d) said actuator lever member having a cam blade section engagable with a portion of said knife blade assembly in both the folded and open positions and a cam section engagable with said cam assembly to rigidly anchor said knife blade assembly both in the folded and open positions against movement;

(e) said cam blade section of V-shape in transverse crosssection adapted to contact a similarly shaped but reverse portion of an open cam lock section of said knife blade assembly so as to hold same rigidly in the open/usage position;

(f) a convey and actuator assembly attached to said cam lock assembly operable to aid in movement of said cam lock assembly from the closed actuated position to an open released position;

(g) said convey and actuator assembly is attached to a portion of said cam assembly so as to aid in the movement thereof from a latched and unlatched position;

(h) said convey and actuator assembly includes a strap member which is secured to said cam assembly and a conveyance member;

(i) said conveyance member having a hook section which is engagable with a porion of one's pocket or belt structure; and

(j) said conveyance member including a cutter section which is operable for slicing thin material such as a person's clothing for removing same during an emergency.

4,563,814
DISPOSABLE CLIPPER HEAD

John Trichell, 301 A East Dr., and Ronald M. Wheeler, 2606 Drummond St., both of Vicksburg, Miss. 39180

Filed Jan. 11, 1984, Ser. No. 569,961
Int. Cl.[4] B26B 19/06
U.S. Cl. 30—225 7 Claims

1. A disposable two piece clipping head adapted for attachment to an electric clipper for clipping hair,

(a) one of said two pieces comprising a fixed member formed of synthetic plastic material, including

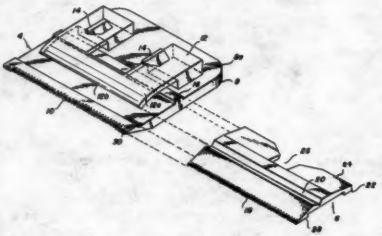
(1) a generally rectangular, planar base portion having one toothed edge;

(2) a spring portion integrally connected with and extending from an upper planar surface of said base portion, said spring portion extending forwardly and being

spaced from and parallel with said surface and terminating at a forward edge spaced rearwardly from said toothed edge; and

(3) lug means integrally connected with and extending from an upper surface of said spring portion, said lug means being adapted for interlocking attachment to the electric clipper; and

(b) the other of said two pieces comprising a movable member formed of synthetic plastic material and arranged between said fixed member base portion and said spring portion, said movable member having a generally rectangular planar configuration and one toothed edge arranged adjacent said fixed member toothed edge, the upper surface of said movable member containing a groove spaced from and parallel with said movable member toothed edge, said groove being adapted to receive said forward edge of said fixed member spring portion, whereby said spring portion retains and guides said movable member relative to said fixed member when said fixed member is attached to an electric clipper and said movable member is driven by the clipper for reciprocal movement to clip strands of hair between said adjacent toothed edges.



4,563,815

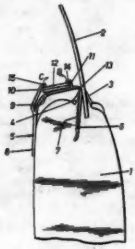
DEVICE FOR CUTTING THROUGH AUTOMOBILE BELTS WITH A KNIFE

Volkwin Hoffelner, Hötzendorfergasse 10A, A-3423 St.Andrä-Wördern, Austria

Filed Jul. 20, 1984, Ser. No. 632,888

Int. Cl.[4] B26B *29/02*; B60R *7/08*

U.S. Cl. 30—296 A **8 Claims**



1. A device for cutting through automobile safety belts with a knife, said device comprising:

a holder including a pair of spaced flanges to engage a portion of a vehicle door between a window and an inner door surface, a web extending between said flanges, a pair of spaced, upwardly protruding lugs extending from said holder and terminating in inwardly facing, spaced end portions to define with said web a knife-receiving opening;

a substantially planar knife adapted to be slidably received in said knife-receiving opening, said knife including a handle having a side wall and a slot positioned obliquely relative to said side wall and having an opening to receive an automobile safety belt, said slot including a knife edge positioned at an inner portion thereof to permit the cutting of an automobile safety belt, said knife edge being removable from said holder.

4,563,816

CUTLERY

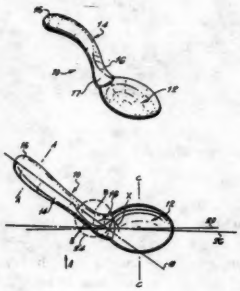
Vivienne D. Jagger, West Perth, Australia, assignor to Little People Limited, Hong Kong

Filed Jun. 30, 1983, Ser. No. 509,358

Claims priority, application United Kingdom, Jul. 5, 1982, 8219408

Int. Cl.[4] B25G *1/00*; A47J *43/28*

U.S. Cl. 30—343 **14 Claims**



1. A piece of cutlery comprising

a handle having a front end and a remote end, said handle defining a longitudinal axis positioned in a vertical plane when said cutlery piece is viewed in top plan view, said remote end being of a generally round barrel-shaped configuration for easy grasping by the four fingers of a user's hand when said handle is to be held in fist like fashion by the user,

an operative portion joined to said handle's front end, said operative portion defining a longitudinal axis also positioned in a vertical plane when said cutlery piece is viewed in top plan view said handle's longitudinal axis and said operative portion's longitudinal axis being angled to form an obtuse angle therebetween when said cutlery piece is viewed in top plan view, and

a relatively flattened area defined on said handle's surface adjacent to the joint between said operative portion and said handle's front end, said flattened surface being sized to accommodate, and to locate on said handle, the ball of a user's thumb when the four fingers of the user's hand grasp said handle's remote end in fist like fashion, and said flattened surface being angled downwardly from the top surface of said handle toward a horizontal plane that includes said operative portion's longitudinal axis, and said flattened surface being angled inwardly toward the interior of said obtuse angle, relative to that vertical plane that includes said handle's longitudinal axis as is apparent when said handle's flattened surface is viewed in cross section view or in top plan view,

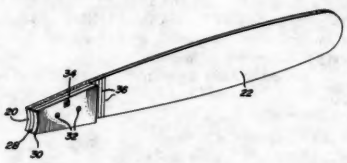
the orientation and location of said flattened surface for a user's thumb cooperating with said handle's remote end to permit a user of relatively young age to grip said cutlery piece, and to control said cutlery piece, so that when said cutlery piece is held by said relatively young user said operative portion can be moved during normal usage of said cutlery piece by said user between the user's food dish and the user's mouth simply by raising the user's arm.

4,563,817

CHAIN SAW SLACK ADJUSTER

Dawson N. Leighton, Rte. 3, Box 332, Dover, Fla. 33527

Filed Jul. 7, 1983, Ser. No. 512,106
Int. Cl.[4] B27B *17/02, 17/14*
U.S. Cl. 30—386 7 Claims



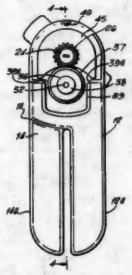
6. A chain saw including a chain saw bar mounting flange having a pair of threaded shank means projecting outwardly from one side thereof, an elongated chain saw bar including a base end provided with at least one elongated longitudinal slot and overlying said one side of said mounting flange with said shank means slidably received through said slot, clamp plate structure overlying the side of said base end remote from said mounting flange and having openings formed therein through which said shank means are received, threaded nut means engaged with said shank means for clamping said base end between said clamp plate structure and mounting flange, the opposing sides of said clamp plate structure and base end including coacting ratchet and pawl means preventing longitudinal displacement of said chain bar relative to said mounting flange in a direction in which said base end faces and allowing longitudinal, displacement of said saw bar in the opposite direction relative to said mounting flange when said threaded nut means are partially loosened.

4,563,818

CAN OPENERS

Julis Kreth, Pfungstadt; Alfons Schreiber, Ebenweiler, and Willi Steinko, Nassau, all of Fed. Rep. of Germany, assignors to Mike & Kremmel Limited, Kowloon, Hong Kong

Filed May 8, 1984, Ser. No. 608,059
Claims priority, application United Kingdom, Aug. 1, 1983, 8320669; Apr. 4, 1984, 8408685
Int. Cl.[4] B67B *7/72*
U.S. Cl. 30—417 7 Claims



1. A hand-held can opener intended to provide a cut around the wall of a can below the lid and rim which are severed by the cut from the rest of said can, the can opener comprising:

a pair of body members pivotally joined to one another,

an integrally-formed handle for each body member extending generally away from the point of pivoting and movable between a more open position and a more closed position, said handles being intended to be grasped by one hand of the user in the more closed position,

a spindle,

a driving wheel attached to said spindle to be brought into contact with the lip of the lid of a can,

means for manually rotating said spindle to cause said driving wheel to orbit the can opener relatively around the top of the can,

a cutting wheel which, in an operating cutting position, forms a nip with said driving wheel so that the cutting edge of said cutting wheel is forced to penetrate through the wall of the can and provide a cut around the can as the opener orbits relatively around the can,

a mounting plate slidably supported by one of said body members and on which said cutting wheel is rotatably mounted, the sliding plate being movable between the operating cutting position where the driving wheel forces the cutting edge to penetrate the can wall and an inoperative position where said cutting wheel is moved away from said cutting wheel, and

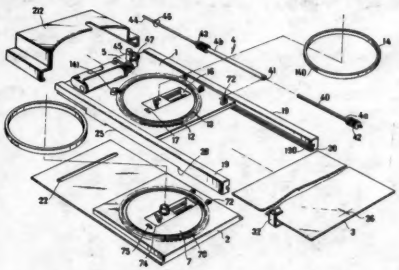
cam means for moving said plate and said supported cutting wheel to said cutting position as said handles are pivoted towards the said more closed position and moving it away to its inoperative position when said handles are pivoted away from that said limit of pivoting towards said more open position, said cam means including a substantially straight slot inclined at an angle to the axis of sliding of the mounting plate and formed in the said other body member, i.e. the one which does not slidably support the mounting plate, and a pin projecting from said mounting plate into the slot.

4,563,819

ELLIPSOGRAPH CAPABLE OF DRAWING DOTTED LINE

Tien-Fu Ching, 14, Pei Chan Rd., Pei Shan Li, Hsi Chih City, Taipei Hsien, Taiwan (221), and Lung-Chiao Chou, 1, Alley 9, Lane 250, Cheng Kung Rd., Sec. 2, Nei Hu, Taipei, Taiwan (114)

Filed Oct. 11, 1984, Ser. No. 659,802
Int. Cl.[4] B43L *11/04*
U.S. Cl. 33—30.4 4 Claims



1. An ellipsograph comprising:

(a) a base consisting of a pair of parallel rails having grooves formed in their inwardly facing sides, and a plate bridging said rails, said plate being attached to an upper surface of said rails and extending from one end of said rails to approximately the mid-point of said rails;

(b) a support plate slidably mounted in a lower groove in said rails, said support plate having a U-bracket partially surrounding one of said rails;

(c) a slide plate slidably mounted in an upper groove of said rails, said slide plate having a transverse groove formed near one end and a first circular opening formed near the opposite end;

(d) a motor having a shaft bearing a gear, said motor being

mounted upon the surface of said bridging portion of said base, adjacent to the end of said base;

(e) a battery case mounted upon said base and connected to said motor by conductive wires, at least one of which is connected to a switch;

(f) a second circular opening formed in a portion of said bridging portion of said base;

(g) a puller disc fitted into said second circular opening having gear teeth at its circumference and a lateral slot formed along a diameter, said lateral slot having rails formed in the long sides;

(h) a puller carrier slidably fitted into said lateral slot engaging said rails;

(i) an adjusting screw rod threaded through said puller carrier and rotatably engaged into the end walls of said lateral slot, having a knurled knob thumb wheel affixed to one end;

(j) a puller rod mounted in said puller carrier projecting below said base and slidably engaging said transverse groove in said slide plate;

(k) a pen carrier disc mounted in said first circular opening having gear teeth at its circumference and a lateral slot formed along a diameter, said lateral slot having rails formed in the long sides of said lateral slot;

(l) a pen carrier slidably fitted into said lateral slot of said pen carrier disc and engaging said rails;

(m) an adjusting screw rod threaded through said pen carrier and rotatably engaged into the end walls of said lateral slot, having a knurled knob thumb wheel affixed to one end;

(n) a pen holder mounted in said pen carrier, adapted to hold a pen projecting below said pen carrier disc; and

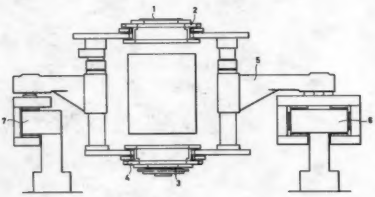
(o) a transmission rod rotatably and slidably mounted through fasteners on said bridging portion of said base and on said slide plate, said transmission rod carrying a gear for engagement with said bevel gear attached to said motor shaft and worm gears engaging said gear teeth on the circumference of said puller disc and said pen carrier disc.

4,563,820

ALIGNING SYSTEM

Junji Isohata, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1983, Ser. No. 542,978
Claims priority, application Japan, Oct. 27, 1982, 57-189684
Int. Cl.[4] G01B *5/24*
U.S. Cl. 33—180 R **8 Claims**



1. An aligning system for aligning a first object and a second object with each other by establishing a predetermined condition between the two and in relation to an imaging optical system for projecting the image of the first object onto the second object, said aligning system comprising:

means for holding the first and second objects;

means for altering the condition between the first and second objects held by said holding means by moving one of the first and second objects relative to the other thereof; and

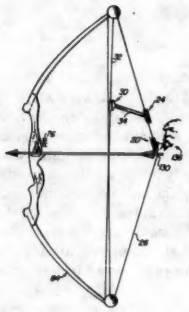
means for supporting said holding means through fluid, said supporting means including means for further altering the condition between the first and second objects and in relation to the imaging optical system to the predetermined condition by changing the attitude of said holding means relative to the imaging optical system by controlling the pressure of said fluid through which said holding means is supported.

4,563,821

PEEP SIGHT FOR COMPOUND BOW

Charles A. Saunders, Columbus, Nebr., assignor to Saunders Archery Co., Columbus, Nebr.

Filed Oct. 31, 1984, Ser. No. 666,771
Int. Cl.[4] F41G *1/00*
U.S. Cl. 33—265 **18 Claims**



1. A sighting assembly including a peep sight for use with a compound bow including a bow string having a plurality of cable segments including a straight cable segment,

said peep sight including an elongate body, post means integral with and projecting from said body for coupling with divided strands of a bow string and for shiftably selectively positioning and mounting said peep sight in place on a bow string of a compound bow,

said peep sight being formed with bore means for sighting through said body from a rear face thereof toward a target zone,

control means for aligning a drawn bow string and for stabilizing and positively positioning the string-mounted said peep sight to orient said body of said peep sight to bring said bore means in said peep sight to extend in a plane paralleling a longitudinal axis of an arrow held in the drawn bow,

said control means including band means for establishing a tensioned connection between a forwardly positioned straight cable segment and the drawn bow string of a compound bow, and

fastening means for securing opposed ends of said band means respectively to the straight cable segment and to the drawn bow string of the compound bow.

4,563,822

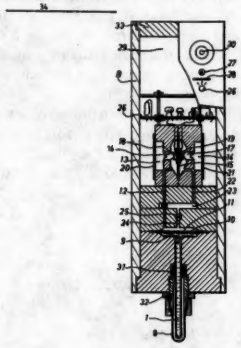
LEVEL DEVICE FOR MASONRY WORK

Marcel Legris, Place de la Parette Air Bel Bt. 48, 13011 Marseille, France

Filed Mar. 16, 1984, Ser. No. 590,304
Claims priority, application France, Mar. 18, 1983, 83 04618
Int. Cl.[4] G01C *5/04*
U.S. Cl. 33—367 **9 Claims**

1. Level device of the type used for masonry work, comprising a first chamber and a second chamber, a flexible tube (1) connected to one end to said first chamber (2) closed by a first diaphragm (3) offering resistance to movements of the liquid contained, the movements of the said first diaphragm (3) limited within a first space (4), the other end of the tube (1) being connected to said second chamber (9) closed by a second diaphragm (10) and being slightly stretched, this second dia-

phragm (10) having a second space (11) thereabove containing air, a first channel (12) connecting said second space (11) to a third chamber (13) separated from a fourth chamber (14) by another slightly tightened third diaphragm (15) controlling on each side an adjustable needle-type contact switch and each of the elements of which are electrically connected to an outside source of current, this third diaphragm (15) at rest being perfectly flat and maintaining the said contact switches very slightly opened, said third and fourth chambers (13–14) being of the same volume and located in order to be subject to the same temperature variations, the volume of air in said first channel (12) and said second space (11) being compensated for in a manner as equal as possible because of temperature variations through a second channel (22) and a fifth chamber (23), a third channel (24) connecting the various spaces on each side of said slightly tightened third diaphragm (15) and being opened and closed by a valve (25), and electric batteries, a main switch, two indicator lights controlled by needle-type contact switches operated by said third diaphragm (15) which is itself actuated by compressed air through said first diaphragm (10) in relation to the movements of the liquid in accordance with the principle of communicating vessels and connected to the mechanical effects of said first and second diaphragms (3 and 10), a piston moved relative to one of said third and fourth chambers (13 or 14) allowing pressure in these chambers to be corrected with respect to the third diaphragm (15) losing shape.



4,563,823

MEASURING HEAD OF A MULTI-CORD MEASURING MACHINE

Otto Klingler, Oberndorf, and Kurt Linder, Karlsruhe, both of Fed. Rep. of Germany, assignors to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany

Filed Jul. 25, 1984, Ser. No. 634,124

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1983, 8322759[U]

Int. Cl.⁴ G01B *7/02*

U.S. Cl. 33—558 **7 Claims**

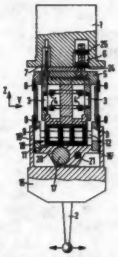
1. A measuring head of a multi-coordinate measuring machine comprising:

an upper part defining a fixed frame of reference;

a plurality of carriers each connected to said upper part for movement in a mutually-exclusive orthogonal direction; and

an electrodynamic transducer connected between two of said carriers and said upper part for driving and stopping movement in each of the mutually exclusive orthogonal directions respectively:

each electrodynamic transducer comprising two electrical coils extending in one of the mutually exclusive orthogonal direction and a core movable with respect to said two coils, said core carrying a permanent magnet for each coil, said coil being connected to one of the two carriers and



upper part and said core being engageable and fixable with respect to the other of said two carriers and upper part.

4,563,824

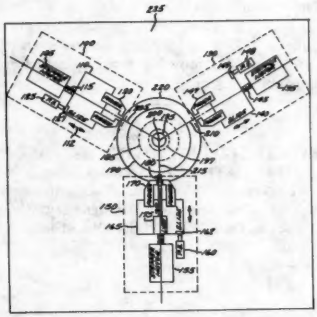
METHOD AND APPARATUS FOR DISC POSITION CENTERING

Kenneth W. Baun, El Toro, Calif., assignor to Charlton Associates, Irvine, Calif.

Filed Dec. 12, 1983, Ser. No. 560,533

Int. Cl.⁴ G01B *5/25*

U.S. Cl. 33—568 **18 Claims**



1. Apparatus for centering an object having a substantially circular periphery, comprising:

first object positioning means for contacting the periphery of the object and adapted to operate in response to first positioning signals;

second positioning means for contacting the periphery of the object and adapted to operate in response to second positioning signals, said second positioning means including a displacement measuring means adapted to generate a displacement signal indicative of its position relative to a reference location;

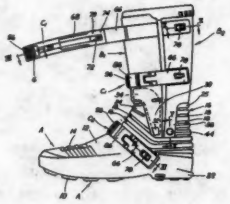
controller means, coupled to said first and second positioning means and adapted to provide said first and second positioning signals thereto, for controlling the positioning means to contact the object, determining the radius of the object as a function of the displacement signal and subsequently controlling the first and second positioning means so as to position the center of the object substantially at a predetermined axis.

4,563,825

BOOT PARTICULARLY FOR SPORTSWEAR

Igino Tesser, Treviso, Italy, assignor to Nava & C. S.p.A., Como, Italy

Filed Sep. 8, 1982, Ser. No. 415,776
Claims priority, application Italy, Nov. 20, 1981, 25216 A/81
Int. Cl.[4] A43B 5/00
U.S. Cl. 36—131 15 Claims



1. A boot, particularly for use by a motorcyclist or other wearer,

comprising in combination,

an inner part to be worn by the wearer,

an outer part formed of three complementary portions including a first portion forming a shoe of said boot and being located at the bottom of said boot, and

two semi-leggings which are complementary to each other and which join at an upper part of said shoe; said two semi-leggings having perforated appendices at their respective bottom portions,

said shoe including a vamp, said vamp being provided with a legging,

articulated elements which are held, at the height of the malleolus of the wearer's foot, by said legging and which are hinged to said perforated appendices; and

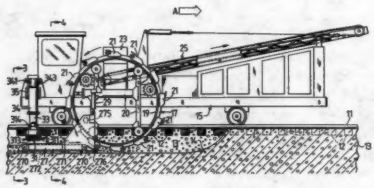
securing devices for movably securing said two semi-leggings to each other.

4,563,826

APPARATUS FOR REMOVING BALLAST FROM BENEATH A RAILROAD TRACK

John B. Whitaker, Jr., Wetumpka, Ala., assignor to Kershaw Manufacturing Company, Inc., Montgomery, Ala.

Filed Oct. 24, 1984, Ser. No. 664,256
Int. Cl.[4] E02F 5/08, 5/22
U.S. Cl. 37—97 5 Claims



1. An apparatus for removing material from beneath a railroad track comprising in combination:

(a) rotary trench digging means having digging buckets arranged to circulate about a horizontal axis so as to dig a trench along said track when said buckets are in their lowest position and to discharge material therefrom at or near their highest position;

(b) undercutter means for digging and transporting said material extending horizontally beneath said track during normal operation and having a discharge end disposed within said trench for discharging said material thereinto rearward of said trench digging means; and

(c) horizontal conveying means extending longitudinally within said trench beneath said undercutter means during said normal operation for receiving material discharged thereby and conveying said material in a forward direction to a point proximal said rotary trench digging means for removal from said trench thereby, said horizontal conveying means including:

(i) a frame member pivotally mounted in cooperative relation with said rotary trench digging means, such that said frame member is supported selectively in a substantially horizontal position and in a pivoted position substantially removed from horizontal;

(ii) an auxiliary conveyor mounted within said frame member and aligned therewith having a discharge end proximal said rotary trench digging means when said frame member is supported in said substantially horizontal position;

(iii) drive means operatively connected to said auxiliary conveyor for supplying motive force thereto; and

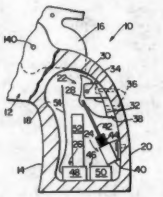
(iv) means for moving said frame member selectively to said substantially horizontal position and to said pivoted position.

4,563,827

SAFETY SYSTEM FOR DISABLING A FIREARM

James Heltzel, Rte. 1, Box 351, Mauertown, Va. 22644

Filed Mar. 14, 1984, Ser. No. 589,543
Int. Cl.[4] F41C 17/00
U.S. Cl. 42—70 R 12 Claims



1. A safety system for selectively disabling a firearm which is fired by a mechanical movement comprising:

a block which is moved between an engaged position whereby the mechanical firing movement is blocked and a disengaged position whereby the mechanical firing movement is not blocked, said block having a bearing surface which engages a relatively immovable part of the firearm when said block is in the engaged position to positively prevent the mechanical firing movement from operating;

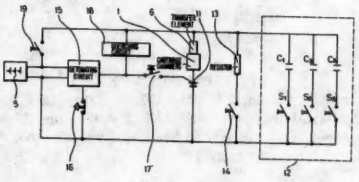
a moving means for moving said block from the disengaged position to the engaged position, said moving means being normally biased to move said block to and hold said block in the disengaged position; and

a remotely controlled actuating means for actuating said moving means including (a) a transmitter means for selectively transmitting a signal, said transmitter means being designed to be carried by the operator of the firearm, and (b) a receiver means located adjacent said moving means for receiving the signal from said transmitter means and for operating said moving means.

4,563,828
DETONATOR MECHANISM FOR CARTRIDGES, PARTICULARLY FOR CARTRIDGES USED IN MANUAL WEAPONS

Arndt Kriegeskorte, Aichtal-Aich, Fed. Rep. of Germany, assignor to Kriegeskorte & Co., GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 19, 1983, Ser. No. 563,086
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1982, 3247211; Sep. 9, 1983, 3332530
Int. Cl.[4] F41C *19/12*; F42B *5/08*
U.S. Cl. 42—84 **12 Claims**



1. A detonator mechanism for cartridges, particularly cartridges for use in a manually actuatable weapon, and normally actuatable by a firing pin, each cartridge including a casing having at least a partial region which is electrically conductive, and a detonator with an electrically conductive detonator housing, including a floor portion, said detonator housing containing detonating means ignitable above a predetermined detonating temperature, a portion of said weapon being adapted to contain at least one of said cartridges, and being electrically connected to said conductive region of said casing, comprising, in combination,

detonating current transfer means made of an electrically conductive material, being movably supported with respect to said floor portion, and being arranged to establish a contact with said floor portion, there being formed external of said detonator housing a transition resistance between said floor portion and said detonating current transfer means during said contact establishment,

at least one rechargeable capacitor serving as a source of detonating current, said source of detonating current, said detonating current transfer means, said detonator, said casing, and said portion of said weapon forming a series-connected circuit,

a switch connected in said circuit for the activation thereof,

said detonator housing being free of any resistive element disposed therein which is proximate to said detonating means,

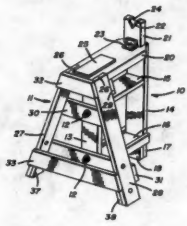
said detonating current and said transfer resistance being selected so that heat generated by said detonating current in said transfer resistance is sufficient to heat said detonating means at least up to said detonating temperature.

4,563,829
SHOOTING BENCH

Thomas J. Bozick, 5485 Carbon Hill Rd., East Palestine, Ohio 44413

Filed Jun. 11, 1984, Ser. No. 619,572
Int. Cl.[4] F41C *29/00*
U.S. Cl. 42—94 **5 Claims**

1. A shooting bench comprising a pair of vertical supports, one of which has vertical and horizontal frame members and a flat body member forming the top portion thereof and the other one of which vertical supports comprises a triangular frame unit having inclined oppositely disposed frame members and secondary horizontal frame members, means at the upper end of said other vertical support for receiving a portion of said flat body member forming the top of said first mentioned vertical support and a notched block mounted on said flat body member adjacent one end thereof oppositely disposed with

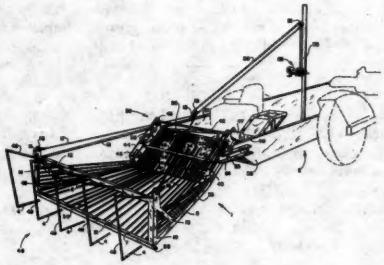


respect to said other vertical support on which a target pistol or the like may be movably positioned and supported.

4,563,830
PROCESS AND APPARATUS FOR HARVESTING SOFT SHELL CRAYFISH

C. Dean Cain, Jr., Baton Rouge, and Ronnie A. Bean, Maringouin, both of La., assignors to Tommy French, Baton Rouge, La., a part interest

Filed May 9, 1983, Ser. No. 492,627
Int. Cl.[4] A01K *80/00*
U.S. Cl. 43—4.5 **10 Claims**



1. A process for harvesting from a water body crayfish which comprises:

(a) applying in a portion of the water body a pulsating electric current of sufficient current density to cause the crayfish to move toward a moving trawl assembly and having a pulse rate that allows the tail of the crayfish to contract in synchronization with the pulse rate;

(b) moving the location of the current at a speed greater than the speed of the crayfish;

(c) catching the moving crayfish by said moving trawl assembly;

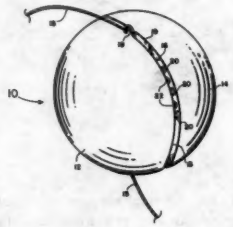
(d) conveying the caught crayfish to a sorting area; and

(e) sorting the crayfish as desired; said electric current being pulsed 2–10 times/sec., having a pulse duration of 10–200 msec. and creating a pulsed electric field with a current density of 0.05–0.30 ma/cm^2.

4,563,831
FISHING FLOAT

James W. Gibney, P.O. Box 263, Edgewater, Fla. 32032

Continuation-in-part of Ser. No. 453,775, Dec. 22, 1982, abandoned. This application May 25, 1984, Ser. No. 614,268
Int. Cl.[4] A01K *93/00*
U.S. Cl. 43—44.91 8 Claims



1. A unitary fishing float comprising:

an essentially hollow buoyant body having a first central longitudinal axis provided with a slot defined by a pair of slot faces extending radially from said longitudinal axis to the exterior surface of said body and a second central axis at right angles to said first axis and parallel to said slot faces;

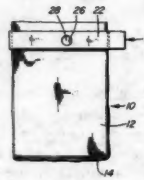
a plurality of fishing line holding ridges disposed adjacent to said second axis and extending normally from said longitudinal axis toward the exterior surface of said body, a set of said ridges formed in each of said slot faces of said body such that the ridges of one of said slot faces interleaves with the ridges of the other of said slot faces; and

a pair of hooks homogeneously formed integral with said body and disposed within said slot, one of said hooks at each end thereof, each of said hooks having a line holding notch aligned with said longitudinal axis, one of said slot faces having a respective access groove complementary to each hook and lying outside said slot.

4,563,832
BAIT CONTAINER

Michael A. Drebot, Bedford, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Province of Nova Scotia, Nova Scotia, Canada

Filed Apr. 19, 1983, Ser. No. 486,578
Claims priority, application Canada, Feb. 15, 1983, 1152745
Int. Cl.[4] A01K *71/00*
U.S. Cl. 43—44.99 5 Claims



1. A reusable container adapted for the controlled release of bait therefrom over an extended period of time during trap fishing, said container having

apertured side walls, the apertures therethrough being in the size range of about 250 to about 1,000 microns and the apertures comprising about 45 percent to 55 percent of the area of said side walls, said container being closed at one end and open at the other end for the filling thereof with bait;

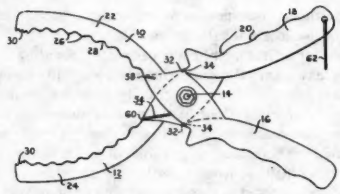
means for closing said open end when said container has been filled with bait, comprising an elongate closure member having a slot therein, said slot being open at one end and closed at the other, and being defined by two parallel arms, said arms clampingly receiving the side walls of said container; and

means for holding said filled container relatively unmoveably within a crustacean fishing trap comprising a bore extending through said parallel arms of said closure member and alignable with openings in the side wall of said container to define a passage adapted to receive an upright member of a bait spindle.

4,563,833
FISH HOLDING DEVICE

Raymond U. Aucoin, P.O. Box 777, St. James City, Fla. 33956

Continuation-in-part of Ser. No. 503,519, Jun. 13, 1983, abandoned. This application Mar. 15, 1985, Ser. No. 712,084
Int. Cl.[4] A01K *97/00*
U.S. Cl. 43—54.1 1 Claim



1. A fish holding device comprising two identical contoured members, each having handle and jaw elements pivoted together at a point between said handle and jaw elements, and biasing means urging the jaw elements toward an open position, said jaw elements being relatively narrow, elongated and in substantial part, arcuately curved with transversely extending shallow rounded fish contacting corrugations, the terminal ends of the jaw elements being planar and having transversely extending teeth adapted to come together when the handle elements are in a closed position leaving the central portion of said jaw elements arcuately spaced from each other a distance of at least one inch at the widest point for accommodating a captured fish in a non-injurious manner, said contacting portions being spaced approximately 7/16 of an inch apart and being approximately 3/16 of an inch in depth, the width of said jaw elements being approximately 1/10 the length of said jaw elements, the length of said jaw elements being substantially equal to that of the handle elements to permit, in an alternative mode of usage, one of the jaw elements to be projected into a fish's mouth whereby the jaw elements of the fish holding device can clamp the lower jaw of the fish to hold and manipulate said fish.

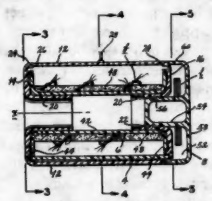
4,563,834
CONTAINER FOR FISHING TACKLE

Donald R. Spencer, Rte. 1, Box 181, Grafton, Ill. 62037

Filed Jul. 2, 1984, Ser. No. 626,764
Int. Cl.[4] A01K *97/00*
U.S. Cl. 43—57.1 22 Claims

1. A box for holding fishing lures, said box comprising: a housing having an opening that provides access to the interior of the housing and is large enough to accommodate fishing lures; the housing also having a cavity that is large enough to accommodate a digit on a person's hand so as to enable that person to stabilize and hold the housing with that hand by reason of the digit being in the cavity; a spool located within the housing and being capable of rotating in the housing, the

spool having a hub and a driving portion that is attached rigidly to the hub, the driving portion being located at least in part



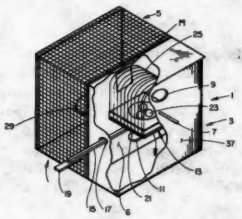
where it may be manipulated from outside of the housing by another digit on the same hand; and retaining means on the spool for holding fishing lures.

4,563,835

BIRD HOUSE TRAP

Clarence A. Job, P.O. Box 163, Arlington Dr., Kelso, Mo. 63758

Filed Sep. 19, 1983, Ser. No. 533,412
Int. Cl.[4] A01M *23/04*
U.S. Cl. 43—69 1 Claim



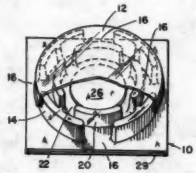
1. A bird trap comprising a bait compartment, a containment compartment, a dividing wall between said bait and containment compartments, said bait compartment formed of a series of walls, an entrance opening in said bait compartment, an escape opening in said dividing wall leading from said bait compartment to said containment compartment, said entrance opening being above said escape opening, a bait housing within said bait compartment movable between a raised position in which said bait housing is in register with said entrance opening thereby to permit a bird to enter said bird trap via said entrance opening and a lowered position in which said bait housing is in register with said escape opening thereby to permit a bird within said bait housing to enter said containment compartment, said bait housing being pivotally mounted with respect to one of said bait compartment walls to provide movement between said raised and lowered positions, means biasing said bait housing in its upper position, and the entrance of a bird into the bait housing effecting movement of said bait housing to its lowered position upon a bird entering therein, said biasing means extending externally of said bait compartment, said biasing means being a counterbalance, said counterbalance including an adjustable counterweight, said counterbalance including an arm carrying said counterweight, said arm supporting the bait housing, and extending laterally exteriorly of said bait compartment, said arm supporting said bait housing at one end, and the counterweight at its other end, and said arm being pivotally connected to one of the bait compartment walls and providing for the pivotal movement with respect thereto, a trap door hinged at the top of the containment side of the dividing wall and cooperating with said escape opening permitting a bird to enter said containment compartment, but preventing the escape therefrom via said escape opening, and said trap door being transparent.

4,563,836

INSECT FEEDING STATION

Keith Woodruff, Mountainside, and Eugene Brandli, Towaco, both of N.J., assignors to American Cyanamid Co., Stamford, Conn.

Continuation of Ser. No. 476,976, Mar. 25, 1983, abandoned, which is a continuation-in-part of Ser. No. 251,672, Apr. 6, 1981, abandoned. This application Nov. 2, 1983, Ser. No. 548,027
Int. Cl.[4] A01M *1/20*
U.S. Cl. 43—131 13 Claims



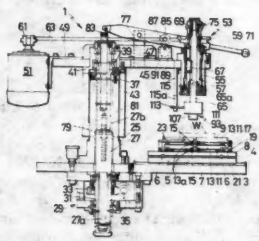
1. An insect feeding station for administering poison to insects comprising a base portion and a cover, said base portion comprising a floor, an outer wall having a plurality of openings, an inner wall spaced apart from said outer wall and having a plurality of openings, said inner wall openings being offset in a horizontal plane from said outer wall openings, said inner wall forming an inner compartment for said poison, and means on the interior of said outer walls for guiding insects toward said openings in said inner walls, said base portion being formed as a unitary piece from a flat deformable sheet of material.

4,563,837

ULTRA-PRECISION GRINDING MACHINE

Yoshihiko Ono, Machida, Japan, assignor to Tokiwa Seiki Industrial Company, Limited, Kanagawa, Japan

Filed Mar. 24, 1983, Ser. No. 478,324
Claims priority, application Japan, Jun. 14, 1982, 57-100763; Jun. 14, 1982, 57-100764; Jun. 28, 1982, 57-109844; Jul. 2, 1982, 57-114064; Jul. 24, 1982, 57-128347
Int. Cl.[4] B24B *5/08*
U.S. Cl. 51—34 R 9 Claims



1. An ultra-precision grinding machine comprising: a grinding tool; means for supporting said grinding tool in a selected position; means for revolving said grinding tool; and means for supporting a workpiece to be machined with said grinding tool; said supporting means including an upper plate on which the workpiece may be mounted, and a plate-like floating retainer means having ball bearing means for enabling said upper plate to shift smoothly and swiftly its horizontal position in a plane by a rolling of balls of said ball bearing means responsive to an external force being applied to the workpiece.

4,563,838

APPARATUS COMPRISING A MACHINING TOOL FOR MACHINING ROLLERS

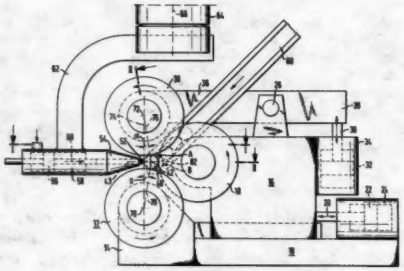
Wolfgang Winkelmann, Wolfach, Fed. Rep. of Germany, assignor to Maschinenbau Grieshaber GmbH & Co., Wolfach, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,433

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311720

Int. Cl.[4] B24B 5/26

U.S. Cl. 51—58 11 Claims



1. An apparatus for machining workpieces, such as barrel-shaped rollers or the like, having a surface curvature and being capable of rotation while being machined; said apparatus comprising a machining tool, a machine frame, a rotatable supporting disk mounted on said machine frame in spaced generally opposed alignment with the machining tool, two rotatable guiding disks mounted on said machine frame laterally to opposite sides of said machining tool, said guiding disks and supporting disk having workpiece retaining positions defining a work station therebetween for retention and rotation of a workpiece for machining engagement of said machining tool therewith, each guiding disk having two laterally spaced parallel disk components for engagement with a workpiece at laterally spaced points, said supporting disk lying in a plane parallel to and equidistant between said disk components, means mounting said supporting disk and one of said guiding disks for selected movement from the workpiece retaining position thereof to a remote position and means for selective feeding of workpieces into and out of said defined work station in a direction lateral to the aligned machining tool and supporting disk and generally perpendicular to the plane of said supporting disk.

4,563,839

FLAP WHEEL

James C. Huppert, St. Croix, Wis., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 516,292, Jul. 22, 1983, abandoned. This application Apr. 18, 1985, Ser. No. 724,486

Int. Cl.[4] B24D 13/04

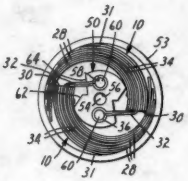
U.S. Cl. 51—334 2 Claims

1. In a abrasive flap wheel assembly comprising:

a hub having an axis, including means for affording attachment of the hub to a source of power to rotate the hub in a first direction of rotation about said axis, having a periphery about said axis, and having a plurality of similarly shaped slots parallel to said axis and spaced about said axis, each of said slots opening through said periphery, having a narrow portion adjacent said periphery and an enlarged inner portion spaced from said periphery by said narrow portion;

a plurality of abrasive packets, each abrasive packet comprising a plurality of pieces of abrasive-coated sheet material disposed face-to-back with first edges generally aligned and with the abrasive coatings of said pieces on corresponding faces thereof, a sheet of tough flexible attachment material having opposite end portions projecting between the pieces from said first edges with a generally U-shaped bight portion of said sheet of attachment material projecting from said first edges, and means for attaching said pieces of abrasive-coated sheet material and said sheet of attachment material together along said first edges, the generally U-shaped portion of each of said abrasive packets being inserted in a different one of the slots in said hub, and said abrasive packets each further including a rod within its U-shaped portion and the enlarged portion of said slot to attach said abrasive packet to said hub, the improvement wherein:

said hub has a plurality of longitudinally extending recesses each defined in part by a trailing surface when said hub is rotated in said first direction, and a different one



of said slots opens through each of said trailing surfaces with said slot being disposed at about a right angle with a radius of said hub through the enlarged portion of said slot, said recesses being sufficiently large to provide clearance for the portions of said abrasive packets adjacent said first edges and the sheet of tough flexible attachment material for each abrasive packet being sufficiently long to afford bending of the sheet of tough flexible attachment material at about a right angle at the first edge of each abrasive packet and positioning of the entire lengths of the sheets of coated abrasive for each abrasive packet at about a right angle to a radius of said hub to afford a compact assembly with contact between a large portion of the outer faces of the outer piece of coated-abrasive sheet material in each of said abrasive packets and an inner cylindrical surface within which said flap wheel assembly is rotated in said first direction.

4,563,840

CLEANING PARTICLE IMPINGING DEVICE AND AIR BLAST CLEANING APPARATUS USING SAID DEVICE

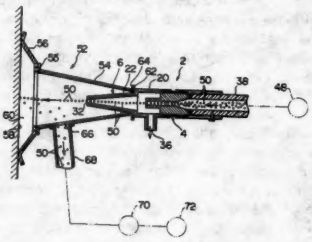
Fukashi Urakami, 5-21-204 Konandai 4-chome, Konan-ku, Yokohama, Japan

Filed Oct. 3, 1983, Ser. No. 538,734

Claims priority, application Japan, Oct. 11, 1982, 57-178178

Int. Cl.[4] B24C 5/04

U.S. Cl. 51—410 9 Claims



1. A cleaning particle impinging device for impinging clean-

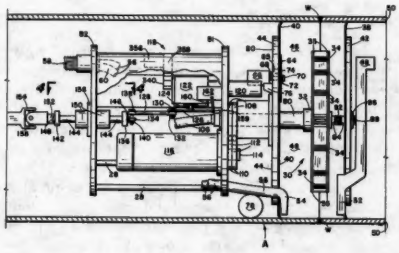
ing particles entrained in compressed air fed through a supply pipe against a surface to be cleaned, said device comprising a first nozzle means having a first nozzle passage extending from a first inlet portion connected to the downstream end of the supply pipe to a first impinging opening located at the downstream end of the first nozzle passage, and a second nozzle means having a second nozzle passage extending from a second inlet portion surrounding the first impinging opening of the first nozzle means to a second impinging opening located at the downstream end of the second nozzle passage in the impinging direction of the first nozzle means and an exhaust port located out of alignment with the impinging direction of the first nozzle means; the compressed air and cleaning particles to be supplied through the supply pipe being impinged from the first impinging opening through the first nozzle passage, at least a greater portion of the cleaning particles impinged from the first impinging opening and a part of the compressed air impinged from the first impinging opening being impinged from the second impinging opening through the second nozzle passage, and the remainder of the compressed air impinged from the first impinging opening being discharged from the second nozzle passage through the exhaust port.

4,563,841

INTERNAL GRIT BLAST WELD JOINT CLEANER

Milburn L. Hart, Tulsa, and Robert J. Hart, Oologah, both of Okla., assignors to Resource Engineering & Manufacturing Company, Tulsa, Okla.

Filed Jun. 22, 1984, Ser. No. 623,345
Int. Cl.[4] B24C *3/32*
U.S. Cl. 51—411 **8 Claims**



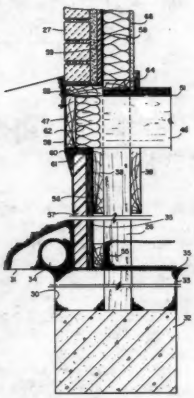
1. A machine for cleaning the interior uncoated surfaces surrounding the weld joints in an otherwise internally coated pipeline comprising a first plate mounted on the machine and extending transversely across the pipeline when the machine is disposed within the pipeline, a second plate mounted on the machine in spaced parallel relation with the first plate, a first resilient member mounted on the first plate and having a circular periphery adapted to engage the inner periphery of the pipeline wall, a second resilient member mounted on the second plate and having a circular periphery adapted to engage the inner periphery of the pipeline wall, said first and second plates with their attached resilient means forming a closed cleaning chamber sealed at its ends with respect to the pipeline, a hollow rotatable hub mounted on the machine and within the cleaning chamber and rotatable on an axis substantially coaxial with the longitudinal central axis of the pipeline, a plurality of hollow tubes extending radially outward from the hub and in communication with the interior of said hub, means for rotating said hub whereby air is forced outwardly through said tubes to create a partial vacuum within the interior of said hub, means for supplying particulate abrasive material to the interior of said hub whereby the vacuum created upon rotation of said hub will cause said particulate material to be propelled outwardly against the interior of the pipeline wall, means for moving the machine so as to position the radial tubes in alignment with a weld joint whereby, upon rotation of said hub and upon supplying said hub with particulate abrasive material, said tubes will propel the particulate material against the weld joint to clean the same by a sand blasting effect, means acting in timed response to the initial rotation of said hub for oscillating said plates and hub as a unit longitudinally with respect to weld joint whereby said tubes will move alternately back and forth across said weld joint to clean the entire weld joint area, and means for removing accumulated spent particulate material and blasted-off material continuously from said cleaning chamber.

4,563,842

POLE-TYPE STRUCTURE AND METHOD OF CONSTRUCTING SAME

Bradley D. Lewis, 3682 Shelbourne Ct., Carmel, Ind. 46032

Continuation of Ser. No. 320,074, Nov. 10, 1981, abandoned.
This application Nov. 25, 1983, Ser. No. 555,073
Int. Cl.[4] E02D *27/00*
U.S. Cl. 52—169.9 **10 Claims**

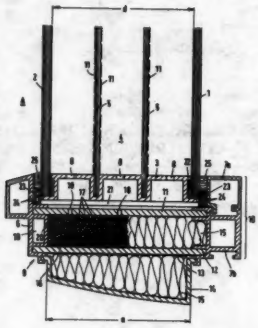


1. A pole-type structure comprising:
earth beneath said structure, said earth having an existing earth grade;
a plurality of walls arranged together to define an interior region, at least one of said walls including a plurality of substantially vertical poles spaced apart from each other;
means for supporting each of said plurality of poles against vertical and horizontal displacement in the earth beneath said structure;
a plurality of floor joists spanning the interior regions, each joint having a support portion adjacent one end, the support portions extending exteriorly of said poles;
means for connecting said floor joists to said poles;
an exterior wall veneer disposed exteriorly of said poles and supported by the support portions of said floor joists, said exterior wall veneer having a bottom;
a retaining wall disposed exteriorly of and attached to said poles, and extending substantially from the existing earth grade to the bottom of said exterior wall veneer; and
earth fill placed against said retaining wall above the existing earth grade at least to the level of the bottom of said exterior wall veneer, whereby the structure is given an exterior appearance indistinguishable from conventional frame structures built upon conventional poured concrete or block foundations.

4,563,843
HEAT INSULATION WINDOW

Paul Grether, Seuzach; Kurt Brader, Winterthur, and Bruno Keller, Zurich, all of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Feb. 2, 1984, Ser. No. 576,332
Claims priority, application Switzerland, Feb. 9, 1983, 715/83
Int. Cl.[4] E06B 7/12
U.S. Cl. 52—172 14 Claims

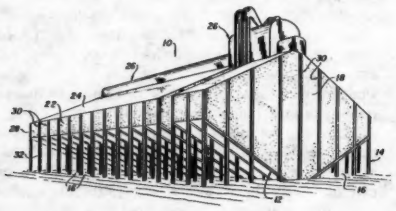


1. A heat insulation window comprising
a pair of outer panes defining an air space therebetween and spaced from each other by a clearance of at least 50 millimeters;
a non-metallic air-permeable peripheral spacer spacing said panes from each other;
at least one transparent partition spaced between said panes;
a selectively reflective coating on at least one of said partition and said panes;
a frame mounting said panes, said partition and said spacer therein, said frame including pair of separate lateral metallic frame members and at least one thermally insulating web joining said frame members together circumferentially in shear resistant relation to form a closed rigid unit, said frame members being spaced from each other to define an insulation path of at least 0.8 times said clearance between said panes and said web having a thermal expansion at least approximately equal to said frame members; and
a drying chamber for a desiccant disposed between said air space and an exterior of the window.

4,563,844
GRAIN ELEVATOR

Klaus U. Driedger, Edmonton, Canada, assignor to Buffalo Beton Ltd., Calgary, Canada

Filed Feb. 28, 1983, Ser. No. 470,629
Claims priority, application Canada, Oct. 25, 1982, 414123
Int. Cl.[4] E04H 7/00
U.S. Cl. 52—192 5 Claims

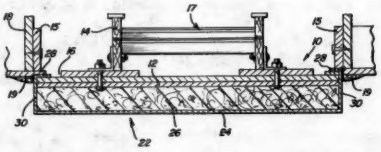


1. In a sloped bin grain elevator constructed of preformed structural components and having the bins therein sloped at or near the angle of repose of the stored material to create a non-confined grain flow pattern; the improvement to provide flexibility in the depth and shape of said bins comprising:
a building structure defined by an inclined base, vertical columns supporting said inclined base, a sloped roof, side and end walls and a plurality of interior partitioning walls;
a row of polygonally-shaped bins, each bin being discrete in relation to adjacent bins;
each bin having a series of staggered intermediate levels to divide the depth of the bin into layers;
said staggered intermediate levels of said bins comprising a series of precast slabs, the width of each slab being slightly less than half the width of said bin, said slabs being positioned end-to-end in a staggered pattern whereby the entire length of each bin forms one intermediate continuous layer of slabs.

4,563,845
ATTIC STAIRWAY INSULATING AND SEALING DEVICE

James J. Stipe, P.O. Box 428, Highlands, Tex. 77562

Filed May 30, 1984, Ser. No. 616,253
Int. Cl.[4] E06B 5/00
U.S. Cl. 52—202 6 Claims

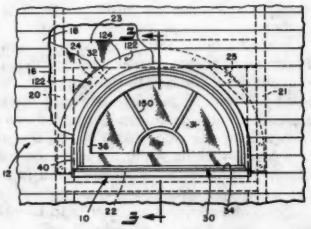


1. An energy saving attachment for use in insulating an attic access opening, comprising a panel structure having a box or tray-like support member specifically dimensioned substantially to cover the access opening, thermal insulating material substantially filling the support member, and means for attaching the support member from below to a swing-down door closing the access opening, wherein the support member includes channel-like flanges along opposed longitudinal sides thereof and wherein the flanges and insulating material are dimensioned for sliding the panel structure into engagement with an outer panel of the attic door with said flanges gripping opposed longitudinal edges of the door to provide the attaching means.

4,563,846
MOLDED WINDOW ASSEMBLY

Dale P. Webb, Conneaut, Ohio, assignor to Webb Manufacturing, Inc., Conneaut, Ohio

Filed Mar. 7, 1983, Ser. No. 472,946
Int. Cl.[4] E06B 3/00
U.S. Cl. 52—208 18 Claims



1. A window assembly comprising an integrally molded

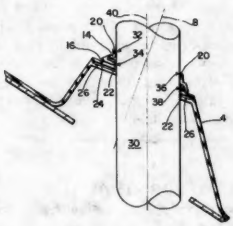
sash, sill, frame and exterior trim unit formed of plastic, wooden interior trim parts fastened to the interior side of said unit, said integrally molded unit including an opening for receiving an insert, said opening being defined at least partially by a perimetric surface integrally formed with said unit and being in a vertical plane against which a marginal portion of the insert may abut, positioning means for accurately locating the insert with respect to said opening and including a lip integrally formed with said sill and sash and extending approximately perpendicular to the plane of said opening, a plurality of bosses extending interiorly of said perimetric surface, and fastening means for securing one of said trim parts to said unit in abutting engagement with said bosses.

4,563,847

UNIVERSAL FLASHING FOR ROOF VENT PIPES

William E. Hasty, Dallas, Tex., assignor to W F Products Corporation, Garland, Tex.

Filed Jun. 17, 1982, Ser. No. 389,332
Int. Cl.[4] E04D *1/36, 13/14*
U.S. Cl. 52—219 **5 Claims**



1. In a universal flashing for roof top and vent pipe geometries as characterized by differing pipe diameters and roof slope angles, wherein said flashing comprises a planar base flange adapted to engage a roof top surface and support the bottom of a frustoconical body member, having a centerline of symmetry, wherein the top end of said body member comprises a ring collar assembly adapted to be distended by, and sealingly engage against, outer diameters of more than one vent pipe diameter, the improvement in said flashing which comprises

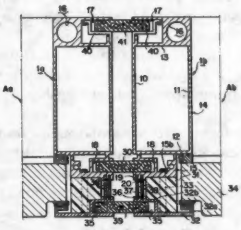
a ring collar assembly which comprises a plurality of stepped sealing portions, each portion adapted to engage a different vent pipe diameter and frangibly be separated as by inserting a knife point or a sharp object, cutting a slotted opening approximately 1" to 1¼" long, inserting a finger into the slotted opening and ripping off a top section from the wall of said body member, wherein at least two sets of sealing projections are provided, and for a first given pipe diameter a sealing portion further comprises a first set of first and second projections separated by a connecting wall portion and disposed generally perpendicular to said body centerline, wherein said first set comprises at least two adjacent projections, wherein a first projection of said first set extends from a proximate end connected at a first location on said body member to a distal end which defines a circular flange surface spaced a first dimension about said centerline, and said second projection of said first set is below and longitudinally adjacent thereto, and extends from a proximate end connected at a second location on said body member to a distal end which defines a circular flange surface spaced a second dimension about said centerline, wherein said first dimension is less than said second dimension and both first and second dimensions are less than the outer diameter of said first given pipe diameter for which sealing engagement is desired, whereby the distal ends of the first and second projections in the first set resiliently and sealingly will engage separately against a first given vent pipe outer surface when used according to its intended purpose and the second projection in the first set also comprises a first projection in a second set, longitudinally below and adjacent to the first set, wherein, further, said projections are of a uniform thickness less than the wall thicknesses of the body member and each of said projections is removable from said body member through a frangible wall section defined as a reduced wall thickness within the connecting wall portion of said body member proximate to the surface of the below and immediately adjacent projection, so that the second projection for a given pipe diameter becomes the first projection for sealing a larger pipe diameter, and said frangible wall section is configured so that removal of a sealing section requires separation along a plane substantially colinear with the top surface of the adjacent projection, and at a point spaced outwardly from the distal end of said adjacent projection, so that the resulting separation contour has no effect upon the sealing ability of said adjacent projection, whereby modification of the ring collar assembly for successively larger vent pipe diameters is accomplished simply by separating one or more projections at one of said frangible wall sections.

4,563,848

SECTION FOR BUILDING

Karl Gartner, Gundelfingen, Fed. Rep. of Germany, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Aug. 1, 1983, Ser. No. 519,194
Claims priority, application Japan, Aug. 2, 1982, 57-116167[U]
Int. Cl.[4] F04H *1/00*
U.S. Cl. 52—235 **6 Claims**



1. A section for building used as vertical and horizontal members and mounted around a panel in the form of a square frame, the section comprising:

(a) a frame body;

(b) a batten disposed across from a mounting piece integrally formed on the outside facing side wall of said frame body and fixedly secured through a screw bolt (62) to the mounting piece so as to leave a predetermined space between the batten and the mounting piece;

(c) a relatively large connecting body formed of heat insulating material disposed in said space; and

(d) at least one connecting plate substantially smaller than said connecting body disposed in said space between the batten and the mounting piece and fitted in small mounting recesses formed in an outside wall of said mounting piece and in an inside wall of said batten opposite to the outside wall of the mounting piece, said connecting plate being separated from said connecting body to block a hollow space fully between said connecting plate and said connecting body to prevent air convection within the layer of air adjacent said connecting body in said hollow space;

whereby said panel is mounted at one side of said space between the batten and the mounting piece and said connecting

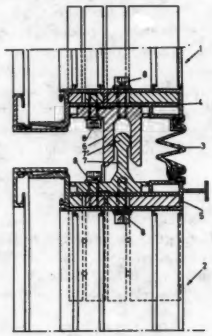
plate is mounted at the other side of said space relative to the interposition of said connecting body.

4,563,849

DEVICE FOR INTERLOCKING TOGETHER TWO ADJACENT METAL FRAMES FROM TWO DIFFERENT LEVELS

Michel Mangal, Bois d'Haine, Belgium, assignor to SADACEM, Belgium

Filed Apr. 4, 1984, Ser. No. 596,585
Claims priority, application Belgium, Apr. 14, 1983, 0/210554
Int. Cl.⁴ E04H *1/00*
U.S. Cl. 52—235 **2 Claims**



1. A device for interlocking two adjacent metal frames from two different levels, said frame being rigidly or flexibly mounted to a framework of a building forming a glass skin said device comprising:

a female part integral with a first metal frame, said female part having a lengthwise recess section projecting from said metal frame in parallel relationship with the general frame plane;

a male part integral with a second metal frame on a vertically adjacent level with said first metal frame, said male part projecting from said second metal frame and extending within said lengthwise recess section, said male part including an enlarged end having a diameter slightly smaller than the spacing between the inner walls of said recess section;

whereby under the action of a translational movement of one frame relative to another, said male part is free to perform a translational and/or rotational movement relative to said female part in the general plane of said frames and said male part is free to perform a hinging movement relative to said female part in a plane at a right angle to the building framework.

4,563,850

DEVICES FOR ASSEMBLING TOGETHER THE SLABS OF CONCRETE CONSTITUTING HIGHWAYS

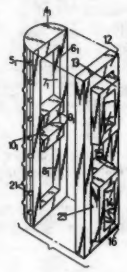
Pierre Guinard, Maintenon, France, assignor to Freyssinet International (STUP), Boulogne Billancourt, France

Filed Jun. 29, 1984, Ser. No. 626,317
Claims priority, application France, Jul. 1, 1983, 83 11003
Int. Cl.⁴ E01C *23/03*
U.S. Cl. 52—396 **9 Claims**

1. In a device for joining together two concrete slabs (1, 2) juxtaposed side by side along a crack (3) and having two rigid semi-cylindrical half shells (4_1, 4_2) which are joined together longitudinally, but not transversely, by a rigid inner key member (11), said half shells being urged transversely apart by elastic means and having two opposing peripheral bearing surfaces (6_1, 6_2) joined together by a seal, the improvement comprising:

said elastic means including a relatively thick belt (12) interposed between the two peripheral bearing surfaces and itself forming the seal therebetween;

said half shells each having a step (9_1, 9_2) forming a part of



said half shells, said steps projecting toward each other and each step extending beyond the plane of the peripheral bearing surface of its respective half shell; and

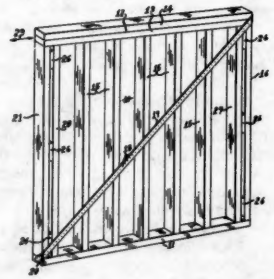
said key member being housed in two recesses (10_1, 10_2) formed respectively in said two steps, said key member being slidable in said recesses transversely, but not longitudinally, of said half shells.

4,563,851

BRACING FOR STUDWALLS

Charles E. Long, Jacksonville, Fla., assignor to Altech Industries, Inc., Jacksonville, Fla.

Filed Oct. 18, 1984, Ser. No. 662,034
Int. Cl.⁴ E04C *2/38, 3/18*
U.S. Cl. 52—656 **12 Claims**



1. In combination a generally rectangular wooden stud wall for a building and a diagonal brace for tensile loading to prevent the wall from being distorted under a racking load, the stud wall including a horizontal top plate and a horizontal sole plate fastened to the respective ends of spaced vertical studs, including end studs joining the respective ends of said top plate and said sole plate and having outer planar surfaces substantially coplanar with the planar surfaces of said ends of said top and said sole plates, the brace comprising an elongated flat metal strap having over its entire length a plurality of spaced holes therethrough for attaching said strap to said plates and said studs with fastening means, said strap extending diagonally across said wall from an upper corner thereof, including the end of said sole plate and the lower end of the adjoining end stud, said brace being bent adjacent each end thereof substantially 90° to lie against said planar surface of said end of

said top plate and against said planar surface of said end of said sole plate and against the contiguous planar surface of said adjoining end stud; and fastening means attaching said brace to said studs and attaching said bent ends of said brace to said ends of said top plate and of said sole plate and said adjoining stud at said planar surfaces.

4,563,852

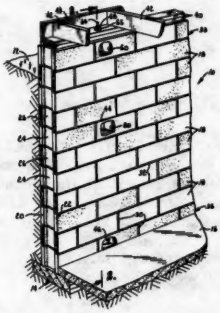
METHOD OF REINFORCING CONCRETE BLOCK FOUNDATION WALLS

Irving Achtenberg, 1028 W. Seventieth St., Kansas City, Mo. 64113, and Otto W. Fleck, 1102 Essex St., Liberty, Mo. 64068

Filed Dec. 21, 1984, Ser. No. 684,944

Int. Cl.[4] E04G *23/02*; E04D *37/00*

U.S. Cl. 52—743 **20 Claims**



13. A method of reinforcing a building foundation wall having inside and outside surfaces and a generally vertical passage extending within the wall, said method comprising the steps of:

forming upper and lower openings in the inside surface of the wall each providing access to the passage from the inside wall surface;

inserting upper and lower anchor elements into the passage through the respective upper and lower openings;

anchoring the upper and lower anchor elements in the passage adjacent the respective upper and lower openings;

inserting an elongate flexible member into the passage and securing opposite end portions of said member to the upper and lower anchor elements to retain the flexible member in the passage in a taut condition;

forming an intermediate opening in the inside surface of the wall at a location to provide access to the passage between the upper and lower openings;

inserting a spacer into the passage through said intermediate opening and engaging said spacer against an intermediate portion of said flexible member in a manner to maintain said member in a bowed shape with said intermediate portion being closer to said inside surface than said end portions; and

inserting cement into the passage to form a cement column therein reinforced by said flexible member when the cement sets with the flexible member embedded therein.

4,563,853

PACKAGING MACHINE

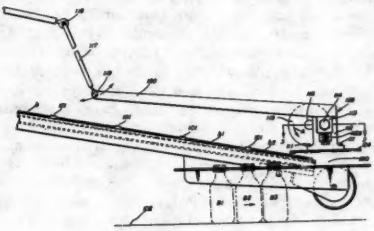
Rodney K. Calvert, Dunwoody, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Aug. 1, 1984, Ser. No. 636,830

Int. Cl.[4] B65B *21/24*

U.S. Cl. 53—48 **11 Claims**

1. A machine for packaging a plurality of articles arranged in at least one row in rectilinear relation in a wraparound-type carrier having a top portion, spaced sidewalls, a pair of bottom lap panels and a plurality of pairs of flaps struck from certain portions of the carrier and constituting article retaining and carrier reinforcing means, said machine comprising means for advancing a group of articles along a predetermined path, means for advancing a wrapper blank along said path and in contact with the upper parts of the articles in a group of articles to be packaged, one flap of each pair of flaps being remote from the adjacent leading or trailing edge of the blank and one flap of each pair of flaps being near the adjacent leading or trailing edge of the blank means for folding said side walls and said lap panels downwardly alongside said group of articles, a tucking stud movable in synchronism with the group of articles and with the blank and disposed generally alongside the path of movement thereof and in generally normal relation to said



side walls and lap panels, said tucking stud being movable in a direction convergent to said predetermined path and into engagement with a leading and trailing flap arranged as a pair of flaps and thereafter in a direction generally parallel to said predetermined path for folding said flaps inwardly of the carrier, a flap folding element pivotally mounted on said tucking stud and having a flap engaging part, a cam follower mounted on said flap folding element, and a fixedly mounted cam having a cam surface for receiving said cam follower whereby said flap folding element is rotated so as to swing said flap engaging part into engagement with one of said flaps thereby to fold said one flap inwardly of the carrier and beyond the position to which said one flap is folded by said tucking stud.

4,563,854

ROUND BALER FOR FORMING BALES OF AGRICULTURAL PRODUCTS

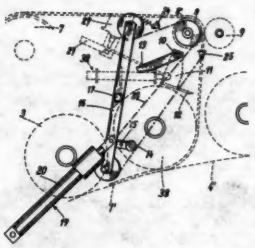
Gustav Ackermann, Harsewinkel; Gerhard Clostermeyer, Gütersloh, and Werner Müller, Harsewinkel, all of Fed. Rep. of Germany, assignors to CLAAS OHG, Harsewinkel, Fed. Rep. of Germany

Filed Jul. 26, 1984, Ser. No. 634,614

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1983, 3330757

Int. Cl.[4] B65B *41/12*, *63/04*

U.S. Cl. 53—118 **12 Claims**



1. A round baler for forming roll bales of agricultural products comprising a housing; rotatable bale-forming rolls ar-

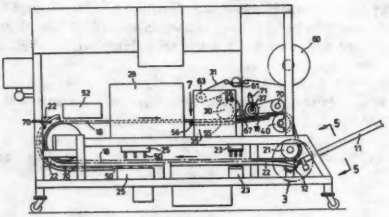
ranged in said housing and spaced from each other; a binding tape supply container mounted on said housing and accommodating a tape supply roll supplying the binding tape to be wrapped around the bale being formed by said rolls; cutoff blade means for cutting off tape portions of a predetermined length from the binding tape supplied from said roll, said cutoff means including a pivotable blade holder, a blade supported in said blade holder and a support shaft which supports said blade holder for a pivoting movement, said blade holder being pivotable between an operative position in which said blade cuts off a tape portion from the binding tape pulled from said supply roll and an inoperative position in which said blade is remote from the binding tape, a pair of tape advancing rollers receiving a starting end of the binding tape from the tape supply roll, at least one of said advancing rollers being rotated after a bale has been formed by said bale-forming rolls in said housing so as to advance said starting end into a gap between two neighboring bale-forming rolls, whereby the binding tape is taken along by said bale forming rolls and the formed bale and is completely wrapped around the formed bale; drive means for rotating said at least one advancing roller, said drive means including a drive wheel connected to said one advancing roller, a pivotable lever having two deflection rollers rotationally supported on said pivotable lever, a hydraulic piston-cylinder unit for pivoting said pivotable lever, and a drive chain running over said deflection rollers and said drive wheel to rotate the latter upon a pivoting motion of said pivotable lever; and means for returning said blade holder to said inoperative position after said blade has cut off a tape portion from the binding tape, said returning means including a returning lever connected to said support shaft, said pivotable lever having an abutment provided with an abutment roller, said abutment roller cooperating with said returning lever to return said blade holder to said inoperative position after a tape portion has been cut off from the binding tape.

4,563,855

APPARATUS FOR PACKAGING AN EDIBLE LIQUID

Lewis W. Smith, and Eric T. Warburton, both of Peterborough, Canada, assignors to Innopac Inc., Toronto, Canada

Filed Feb. 21, 1984, Ser. No. 581,534
Claims priority, application Canada, Oct. 17, 1983, 439159
Int. Cl.[4] B65B *55/10*
U.S. Cl. 53—128 **31 Claims**



1. An apparatus for packaging an edible liquid in sterile, sealed containers having rims about the openings thereof, comprising:

an endless conveyor having upper and lower levels by which at least one row of containers are conveyed through the apparatus;

means for feeding inverted containers onto the lower level of the conveyor which is provided with parallel rails for supporting the containers by the rims thereof, comprising escapement wheels for delivering individual inverted containers onto individual teeth of a feeder wheel which in turn feeds each inverted container onto the lower level of the conveyor;

means for chemically sterilizing the containers as they move along the lower level of the conveyor;

means for filling the sterile containers with the liquid as they move along the upper level of the conveyor;

means for sealing the filled containers about the rims thereof, comprising a ribbon of sterile cover stock having a heat sensitive adhesive thereon, being fed over a payout wheel onto a heated sealing wheel for application to the containers; and

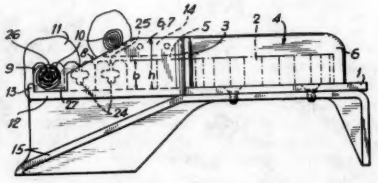
a cutoff wheel located after the heated sealing wheel for severing the connecting ribbon of cover stock between containers.

4,563,856

BAG CLOSING APPARATUS USING CLOSURE TAGS

Willy Kusters, Bruggen, Fed. Rep. of Germany, assignor to Clements Industries, Inc., South Hackensack, N.J.

Filed Aug. 23, 1983, Ser. No. 525,535
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1982, 8224132
Int. Cl.[4] B65B *61/06*
U.S. Cl. 53—138 A **14 Claims**



1. A bag closing apparatus for applying a closure to a collapsed end of a bag, said closure including engagement means for retaining said collapsed end of said bag, comprising:

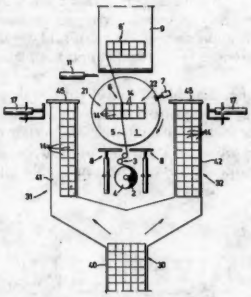
a channel of extended length having an outlet end, a horizontal base surface extending beyond said outlet end, and side walls extending substantially vertically from said base surface, the distance between said side walls corresponding to the dimensions of said closure allowing for sliding motion on said base of said closure within said channel, a first portion of said channel having said side walls extending away from said base by a distance greater than the extension of said closure from said base, a second portion of said channel having said side walls extending from said base to form inclined surfaces leading to said outlet end, said side walls and said outlet end extending from said base by a distance less than the extension of said closure from said base, a closure sliding through said first portion toward said outlet end having said engagement means between said side walls such that engagement with said bag is prevented, said engagement means at least in part being exposed beyond said side walls during movement of said closure through said second tapered portion and opening upward to receive said bag end such that engagement with said bag is enabled while said closure is in said channel, and means for terminating the sliding of said closure along said base surface, said means for terminating acting after said closure has entirely cleared said outlet end of said channel.

4,563,857

METHOD AND APPARATUS FOR STRETCH FILM WRAPPING OF GOODS AGGREGATES

Jan K. A. Bergling, and Ralph H. Widenbäck, both of Jönköping, Sweden, assignors to TRIO-LENG Pac System AB, Jönköping, Sweden

Filed Jul. 16, 1984, Ser. No. 631,094
Claims priority, application Sweden, Jul. 21, 1983, 8304084
Int. Cl.[4] B65B *11/04*
U.S. Cl. 53—399 14 Claims



1. A method of stretch film wrapping of a goods aggregate positioned in a generally horizontal plane, each aggregate including at least two articles, the method comprising the steps:

arranging a goods aggregate in a wrapping station, wrapping tensioned stretch film round the goods aggregate in the station during withdrawal of stretch film from a stretch film store, removing the wrapped goods aggregate from the station,

taking a new goods aggregate to the station, anchoring the stretch film part extending between the wrapped aggregate and the store at the new goods aggregate, and

parting the stretch film between the new goods aggregate and the wrapped aggregate after anchorage, including forming the new goods aggregate by moving at least two articles towards each other and into contact with both sides of the stretch film, which uninterruptedly extends between the stretch film store and the stretch film-wrapped aggregate, so that the film is anchored by being clamped between the articles of the newly formed aggregate.

4,563,858

METHOD OF MATERIAL DISTRIBUTION AND APPARATUS FOR USE IN THE METHOD

Jan Van Der Wal, Rotterdam, Netherlands, and Gerardus L. Nederpel, Sanderstead, United Kingdom, assignors to NAT Shipping Bagging Services Limited, Bermuda

Filed Jun. 7, 1982, Ser. No. 386,064
Claims priority, application United Kingdom, Jun. 10, 1981, 8117753
Int. Cl.[4] B65B *51/07, 7/02, 1/04*
U.S. Cl. 53—418 8 Claims

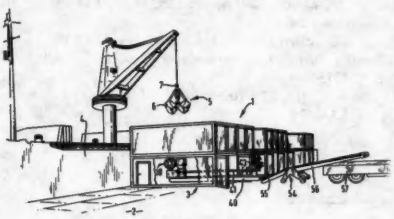
7. A method of distributing free-flowing material, comprising the steps of:

transporting free-flowing material in bulk and a bagging apparatus with weighing means and housed in at least one transportable module of standard shipping container dimensions from a second location to a first location, said module being compatible with other like standardized containers so that said module is stackable on and among said other like containers;

siting said bagging apparatus at said first location;

supplying the material to the bagging apparatus;

weighing the material into batches of predetermined weight in said receptacle;



positioning bags to receive the batches from said receptacle; and

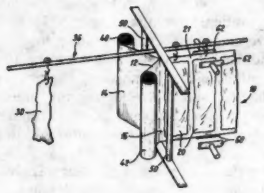
delivering the batches of material into the bags.

4,563,859

METHOD AND APPARATUS FOR PACKAGING PRODUCTS

Berend L. Visser, Kalmthout, Belgium, assignor to Koninklijke Emballage Industrie Van Leer B.V., Amstelveen, Netherlands

Filed Jul. 13, 1983, Ser. No. 513,172
Int. Cl.[4] B65B *9/02*
U.S. Cl. 53—450 12 Claims



1. A method of packaging products comprising:

suspending vertically products to be packaged from a conveyor rail system to be moveable in a path of movement along said conveyor rail system;

providing a pair of supply guide rolls having a sheet of flexible and sealable plastic packaging material extending therebetween and being present in substantially equal amounts on each supply roll;

positioning said supply guide rolls on either side of said conveyor rail system such that said packaging material extends between rolls in a vertical plane transverse to said path of movement, said plastic material having a vertical dimension sufficient to package said products;

moving said products along said path of movement into engagement with said packaging material and beyond said vertical plane while unwinding simultaneously said plastic material from both supply rolls, whereby upon movement beyond said vertical plane said products are wrapped by said packaging material; and

after wrapping each product, clamping together said plastic material at a location upstream of the said product and sealing said plastic material together along the vertical seam so as to completely wrap around said product.

4,563,860

METHOD AND APPARATUS FOR ENVELOPING ARTICLES WITH A PLASTIC FOIL OR THE LIKE

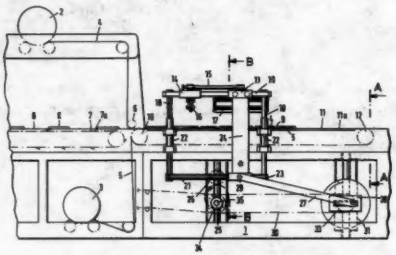
Claus K. Pfankuch, Käthnerort 19a, D-2000 Hamburg 76, Fed. Rep. of Germany

Filed Dec. 7, 1983, Ser. No. 558,859

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1982, 3245156

Int. Cl.[4] B65B *9/02, 51/10, 61/10*

U.S. Cl. 53—450 7 Claims



1. A method for enveloping articles with a plastic foil, and welding and separating the enveloped articles, the method comprising the steps of:

(a) enveloping the articles by supplying foil to articles on a continuously moving conveyor belt, the conveyor belt being driven at a speed higher than the speed with which the foil is supplied thereto;

(b) longitudinally and transversely welding the enveloped articles during continuous movement of the articles along the conveyor belt using (i) a welding device moveable up and down and forward and backwards in relationship to the enveloped articles continuously moving along the conveyor belt and having a transverse welding member and a longitudinal welding member; (iii) a slide for mounting the welding members, the slide being moveable forwards and backwards in relationship to the enveloped articles continuously moving along the conveyor belt; and (iii) a frame for slidably mounting the slide thereon, the frame being moveable up and down in relationship to the enveloped articles continuously moving along the conveyor belt; and

(c) separating the enveloped, welded articles by the longitudinal and transverse welding and the speed of the conveyor belt being higher than the speed with which the foil is supplied thereto.

4,563,861

METHOD OF PACKING COLLECTED OBJECTS AND PACKING STATION THEREFOR

Christian Barillec, 325 boulevard Gambetta, Tourcoing (Nord); Dominique Janvier, 31 Avenue de la Roseraie, Lille (Nord), and Marc Bonneton, 325 boulevard Gambetta, Lille (Nord), all of France

Filed Feb. 10, 1984, Ser. No. 578,863

Claims priority, application France, Nov. 29, 1983, 83 19255

Int. Cl.[4] B65B *47/10*

U.S. Cl. 53—453 7 Claims

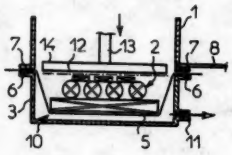
1. Apparatus for packaging objects of various shapes and sizes, comprising:

a container open at the top to receive objects to be packaged and having a peripheral edge and a bottom which is removable laterally, and

a chest open at the top and having a peripheral wall with an upper peripheral edge of a size and shape to support the lower peripheral edge of said container with a plasticized plastic film between the upper peripheral edge of said chest and lower peripheral edge of said container, a bottom and means for applying suction to said chest, after a container containing objects to be packaged is placed on said chest and the bottom of said container is removed laterally to deposit said objects on said plasticized plastic film, to draw said film down into said chest until said objects are within said chest, whereupon said container is removed and a rigid support is placed over said object and bonded to peripheral portions of said film, further comprising means for sensing the uppermost portion of said objects when said plasticized film with said objects thereon is drawn down into said chest by said suction means, said sensing means comprising a sensor positioned over said objects and means for lowering said sensor into contact with uppermost portions of said objects and then raising said sensor before said support is placed over said objects.

4. A method of packaging objects of various shapes and sizes which comprises the steps of:

placing said objects in a container having an open top to receive said objects, a peripheral wall having a lower peripheral edge, and a bottom removable laterally from the container,



placing said container having said objects therein on a chest open at the top and having a peripheral wall with an upper peripheral edge of a shape and size to receive said lower peripheral edge of said container and a closed bottom, said container being placed on said chest with a plasticized plastic film between the lower peripheral edge of said container and the upper peripheral edge of said chest,

removing the bottom of said container laterally from the container whereby said objects rest on said film,

applying suction to said chest to draw said film toward the bottom of said chest until uppermost portions of said objects are within said chest.

removing said container,

placing a support over said chest and bonding it to a peripheral portion of said film supported by said upper peripheral edge of said chest, and

sensing the uppermost portion of said objects when said film is drawn into said chest to determine that said objects are within said chest, the level of the uppermost portion of said objects being sensed by lowering a sensor into contact with the uppermost portion of said objects and then removing said sensor before said support is placed over said chest.

4,563,862

PACKAGE FORMING APPARATUS WITH COMBINED HOLDING AND STRIPPER MECHANISM

Howell T. McElvy, Decatur, Ga., assignor to Kliklok Corporation, Greenwich, Conn.

Filed Oct. 23, 1984, Ser. No. 663,891

Int. Cl.[4] B05B *9/08*

U.S. Cl. 53—552 12 Claims

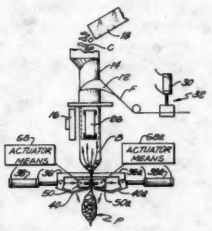
1. A combined holding and stripper jaw apparatus for use in forming a package in a form, fill and seal packaging machine or the like, comprising:

(a) positive holding jaw means operative to close and grasp the packaging film formed into a tube;

(b) stripper jaw means mounted to said holding jaw means for movement between a ready position adjacent said holding jaw means and a strip position at the top of the

package for stripping product previously delivered into the packaging film tube; and

(c) sealing jaw means positioned between said holding and stripping jaw means, said sealing jaw means including cam means for contacting and moving said stripper jaw means



into the strip position as said sealing jaw means are moved in a path to close and seal the packaging film tube and form a bag, whereby stripping occurs during inward movement of the sealing jaws and a minimum length of packaging film is required for each package.

4,563,863

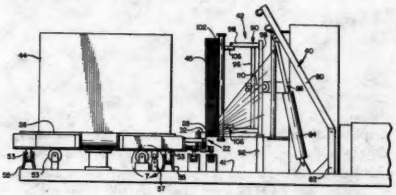
AUTOMATIC STRETCH WRAPPING MACHINE

John R. Humphrey, Naples, Fla., assignor to International Packaging Machines, Inc., Naples, Fla.

Filed Jul. 15, 1983, Ser. No. 514,048

Int. Cl.[4] B65B *11/04*

U.S. Cl. 53—556 **33 Claims**



1. An automatic wrapping machine comprising:

(a) a turnthble having a surface for rotatably supporting a load to be wrapped with a wrapping material;

(b) means for providing wrapping material of a given width to be used to wrap a load disposed on the turntable, the load being wrapped with a section of wrapping material which is defined by a leading edge and a trailing edge;

(c) means for rotating the turntable to cause wrapping of the load with the wrapping material under tension during wrapping;

(d) means for gathering the wrapping material into a reduced width relative said given width comprising a means for engaging the edge of said material;

(e) clamping means mounted for rotation with the turntable for clamping a gathered leading edge of the wrapping material during initiation of wrapping of the load to cause the wrapping material to be wrapped around the load without slippage as it rotates with the turntable and for clamping gathered wrapping material at a conclusion of wrapping the load which becomes the gathered leading edge for wrapping the next load, the clamping means being disposed below the wrapping material at all times during wrapping of the load, except when the means for gathering has gathered the wrapping material and having means to open and close said clamping means;

(f) means for moving said material engaging means in a path aligned with the clamping means to move said material into the open clamping means at the end of the wrapping operation;

(g) cutting means carried by the turntable disposed between the surface of the turntable and the clamping means for severing the gathered wrapping material clamped by the clamping means at the conclusion of wrapping to form the trailing edge;

(h) means, separate from said gathering means, for attaching the portion of the wrapping material located between the load and the wrapping material providing means and the trailing edge to an underlying wrap of wrapping material with a width of contact with the underlying wrapping material being substantially equal to the given width and for aligning the material with the material engaging means; and

(i) means for controlling the operation of the wrapping machine to cause in the following sequence:

(i) the clamping means to clamp the gathered leading edge of the wrapping material gathered during the previous wrapping operation at the initiation of wrapping of a load to hole the wrapping material under tension to maintain stretch in the wrapping material and to release the clamped gathered leading edge of wrapping material at a time before the activation of the means for gathering to allowed the gathered wrapping material to assume a non-stretched condition;

(ii) the means for attaching to be activated to attach the said portion of the wrapping material to an underlying layer of wrapping material along its full width before the activation of the gathering means;

(iii) the means for gathering to be activated after the release of the gathered leading edge of the wrapping material from the clamping means to reduce the width of the wrapping material and move the material engaging means in its path so that it pushes the material into the open clamping means;

(iv) the clamping means to be reactivated after the wrapping material is gathered in the open clamping means to clamp the gathered wrapping material in proximity to the trailing edge of the material; and

(v) the cutting means to be activated to sever the clamped gathered material to sever the trailing edge from the clamped wrapping material whereby the clamping means holds the leading edge for the next load to be wrapped and the means for attaching attaches the trailing edge to the wrapped load.

4,563,864

APPARATUS FOR FILLING SACKS

Heinz Eschmann, Lengerich of Westphalia, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Dec. 12, 1983, Ser. No. 560,514

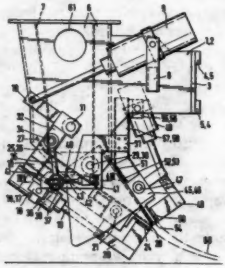
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1982, 3246089

Int. Cl.[4] B65B *43/30*

U.S. Cl. 53—570 **8 Claims**

1. Apparatus for filling sacks, said apparatus comprising: a supporting frame; a pair of opposed closure flaps which are pivotable on said frame about spaced, parallel horizontal axes, said flaps having edges spaced from the axes and including clamping means for clamping opening-defining edges of sacks to be filled; a substantially vertical filling conduit having an axis and positioned between the flaps for supplying filling material for filling the sacks, said conduit being rigid and having an opening inclined to the conduit axis and which is closed by one of said closure flaps upon pivoting of the flaps to a substantially V-shaped receiving position for a new sack; one of said closure flaps being longer than the other flap and completely covering the opening of the filling conduit when the apparatus is in a first, sack-receiving position wherein said longer flap can be pivoted to sealingly abut and cover the opening of the filling conduit when the apparatus is in the

sack-receiving position; and pivoting means to pivot said closure flaps from said first, sack-receiving position to a second, sack filling position wherein said longer flap is pivoted away from the opening of the filling conduit to permit material to flow therethrough into the sack, wherein one of the closure flaps is secured to an arm of a lever means comprising part of



said pivoting means and the lever means is pivoted to the frame and to one end of a piston-cylinder unit carried on said frame, and the other closure flap is secured to an arm of a second lever means comprising part of said pivoting means, coupling means to couple said second lever means to said first lever means so that said pivoting means simultaneously pivots said pair of closure flaps always in the same direction.

4,563,865

Patent Not Issued For This Number

4,563,866

MULTI-ROW CORN CUTTER FORAGE HARVESTER AND/OR PICKER FORAGE HARVESTER

Eberhard Wistüba, Rettenbach; Martin Nüsser, Niederstotzingen, and Xaver Lenzer, Kötz, all of Fed. Rep. of Germany, assignors to Karl Mengele & Söhne, Günzburg, Fed. Rep. of Germany

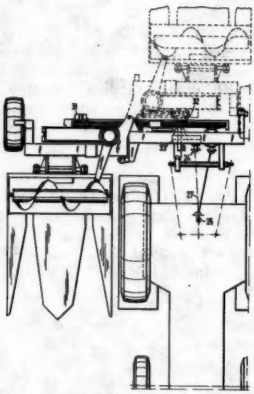
Filed May 9, 1984, Ser. No. 608,500

Claims priority, application Fed. Rep. of Germany, May 9, 1983, 3316966

Int. Cl.[4] A01D *73/00, 69/00*

U.S. Cl. 56—228 **7 Claims**

1. A multi-row corn cutter forage harvester and/or picker forage harvester, such as a forage harvester of the disk wheel type, comprising an elongated first support bar arranged to be mounted on the three-point attachment linkage of a tractor so that said first support bar extends transversely of the normal forward travel direction of the tractor and has a first end, a second elongated support bar, harvesting means mounted on said second support bar, a lockable swivel hinge interconnecting said second support bar to said first support bar adjacent the first end of said first support bar so that said second support bar can be pivoted about the swivel axis from a first position extending laterally outwardly from the first end of said first support bar where the elongated directions of said first and second support bars extend generally in series whereby said second support bar is in a side-mounted position relative to the tractor and to a second position located behind said first bar in the normal forward travel direction of the tractor so that in the first position harvesting operations can be performed and in the second position the harvesting means are in a transport position, and means for driving said harvesting means at least in the first position, wherein the improvement comprises that said drive means comprises a belt drive including a first shaft connection on and spaced along said first support bar from the swivel axis, a second shaft connection on and spaced along said second support bar from the swivel axis, a first pulley mounted on said first shaft connection, a second pulley mounted on said second shaft connection, a belt extending continuously around said first and second pulleys, said swivel hinge located between



and spaced from said first and second pulleys in the first position of said second support bar and said first and second pulleys being located on the same side of said swivel hinge in the second position of said second support bar, means located on said first support bar and on said second support bar, in spaced relation from said swivel hinge, for holding said belt on said first and second pulleys in the first and second positions of said second support bar, said means for holding said belt comprises a first bracket attached to said first support bar and a second bracket secured to said second support bar with said first and second brackets being located closely spaced from said swivel hinge and a first web secured to said first bracket and a second web secured to said second bracket so that said first and second webs engage said belt and retain said belt on said first and second pulleys in the first and second positions of said second support bar.

4,563,867

MOWER MEANS

William S. Bokon, 6111 Geremander Ave., Rialto, Calif. 92376

Continuation-in-part of Ser. No. 237,379, Feb. 23, 1981, abandoned, which is a continuation-in-part of Ser. No. 54,132, Jul. 2, 1979, abandoned, which is a continuation of Ser. No. 816,291, Jul. 18, 1977, abandoned, which is a continuation-in-part of Ser. No. 661,157, Feb. 25, 1976, abandoned. This application Nov. 16, 1981, Ser. No. 321,596

Int. Cl.[4] A01D *55/20*

U.S. Cl. 56—249 **11 Claims**

1. In a mower having a frame mounted on ground wheels with a transverse cutting bar on the frame at a selected cutting

height above ground level and with a rotary cutter assembly cooperative with the transverse bar for cutting operation,

the improvement to eliminate hazard to the operator by the cutting operation comprising:

said rotary cutter assembly having a plurality of outer circumferential cutting edges spaced along the transverse bar of circular profile configuration as seen along the axis of the rotary cutter assembly, and

said circumferential edges being operative to shift along the bar in response to rotation of the rotary cutter assembly

thereby to make the cutting operation nonhazardous by pushing away from the cutting operation any part of the operator's body that may inadvertently intrude into the zone of the cutting operation,

said rotary cutter assembly including arrays of resilient filaments thereon extending beyond its rotary cutting edges to brush against the cutting bar and thus flick loose material rearwardly from the zone of the cutting operation.

4,563,868

LARGE BALING PRESS FOR AGRICULTURAL PRODUCTS

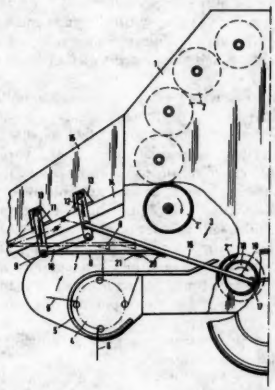
Gerhard Clostermeyer, Gütersloh, Fed. Rep. of Germany, assignor to Claas Ohg, Harsewinkel, Fed. Rep. of Germany

Filed Nov. 5, 1984, Ser. No. 668,073

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1983, 3339925

Int. Cl.[4] A01D *39/00*

U.S. Cl. 56—341 **11 Claims**



1. A large baling press for agricultural products, comprising a plurality of driven winding elements which at least partially limit a pressing chamber and form an inlet opening; means forming a product supply passage before said inlet opening and including prong drum unit limiting said product supply passage at its lower side, and a holding down rack limiting said product supply passage at its upper side, said rack being arranged to perform an oscillating movement in a traveling or product flowing direction and during said movement also to move downwardly in a direction toward said inlet opening so that a product is supplied to said inlet opening by cooperation of said prong drum unit and said holding down rack which limit said product supply passage from above and from below respectively, said rack including a plurality of bars extending parallel to and at a distance from one another and having two ends, and a transverse rod connecting said bars with one another at one of said ends; and a reciprocating coupler connected with said transverse rod.

4,563,869

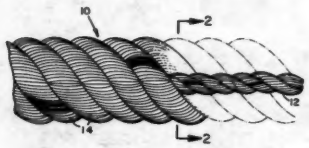
ROPE WITH REDUCED LASH-BACK CONSTRUCTION

Robert L. Stanton, Honesdale, Pa., assignor to American Manufacturing Company, Inc., Honesdale, Pa.

Filed May 17, 1982, Ser. No. 378,908

Int. Cl.[4] D07B *1/02, 5/00*

U.S. Cl. 57—211 **18 Claims**



1. A multi-component rope comprising:

(a) a selected number of first components having first predetermined elongation characteristics, and

(b) a selected number of second components having second predetermined elongation characteristic which are considerably lower than said first elongation characteristics, said second components having an aggregate mass which is considerably greater than the aggregate mass of said first components.

4,563,870

LUBRICATED WIRE ROPE

Wilbert A. Lucht, Danville, Calif., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 549,060, Nov. 7, 1983, abandoned. This application Jun. 8, 1984, Ser. No. 618,797

Int. Cl.[4] D07B *1/16, 7/12*

U.S. Cl. 57—223 **4 Claims**

1. Wire rope comprising a core of a plurality of strands of wire and a plurality of outer strands surrounding said core, each of said outer strands being nested in a space between two

of said core strands and oriented in the same helical lay as the core strands, all of said wires and strands being (a) made of a steel including about 0.03% to about 0.3% chromium, vanadium, molybdenum, or mixtures thereof, (b) coated with a lubricant composition comprising a viscous vehicle solid at ambient temperatures and including at least about 5% finely divided solid lubricant, and (c) stress-relieved at a temperature of at least 675° F.

4,563,871

YARN PIECING METHOD AND APPARATUS

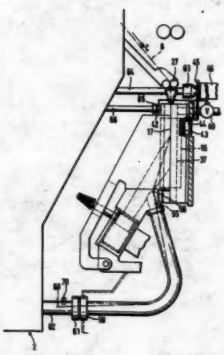
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, and Hans Stahlecker, Haldenstrasse 20, 7334 Süssen, both of Fed. Rep. of Germany, assignors to Hans Stahlecker and Fritz Stahlecker, both of, Fed. Rep. of Germany

Filed Jun. 11, 1984, Ser. No. 619,139

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1983, 3321234

Int. Cl.[4] D01H *15/02*

U.S. Cl. 57—263 **29 Claims**



1. A yarn piecing process for piecing a spun yarn end with fibers in an open-end friction spinning machine of the type having:

two friction rollers rotatably drivable in the same direction and disposed adjacent one another to form a yarn forming wedge-shaped gap therebetween;

fiber supplying means for supplying individual fibers to the wedge shaped gap,

yarn holding suction means for applying suction forces to hold the spinning yarn in the wedge-shaped gap during normal spinning operations; and

yarn withdrawing means for withdrawing yarn from the wedge-shaped gap,

said process comprising piecing the yarn end without exposing the wedge-shaped gap, including:

(i) returning the spun yarn end to beyond the yarn forming region of the wedge-shaped gap utilizing yarn return suction means, and

(ii) subsequently switching on the fiber supplying means and the yarn withdrawing means to facilitate piecing of the yarn end with fibers supplied to the wedge shaped gap,

(iii) wherein said yarn holding suction means is switched off during the return of the yarn end.

4,563,872

START SPINNING ARRANGEMENT FOR AN OPEN END FRICTION SPINNING MACHINE

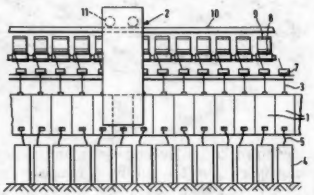
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Ueberkingen, Fed. Rep. of Germany, assignor to Fritz Stahlecker, Fed. Rep. of Germany and Hans Stahlecker, Fed. Rep. of Germany

Filed Apr. 26, 1984, Ser. No. 604,373

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1983, 3315034

Int. Cl.[4] D01H *15/02*

U.S. Cl. 57—263 **41 Claims**



1. Process for start spinning yarn at a spinning unit of an open end friction spinning machine of the type having a yarn forming region composed of friction surface means, fiber feeding means for feeding individual fibers to the yarn forming region, yarn withdrawal means for withdrawing formed yarn from the yarn forming region, and suction means for applying suction air flow to assist in holding the forming yarn in the yarn forming region, said process comprising:

interrupting the feeding of fibers to the yarn forming region by the fiber feeding means,

exposing the yarn forming region by moving a cover part of the spinning unit from its closed normal spinning position to an open position,

returning a previously formed yarn end portion to a predetermined intermediate position adjacent the exposed yarn forming region,

moving the cover part to the closed normal spinning portion,

transferring the yarn end portion from the intermediate position to the yarn forming region while activating the fiber feeding means to supply individual fibers to the yarn forming region to piece up with the yarn end portion,

and activating the yarn withdrawal means to withdraw the yarn end portion and the pieced together newly forming yarn.

11. Apparatus for start spinning yarn at a spinning unit of an open end friction spinning machine of the type having a yarn forming region composed of friction surface means, fiber feeding means for feeding individual fibers to the yarn forming region, yarn withdrawal means for withdrawing formed yarn from the yarn forming region, and suction means for applying suction air flow to assist in holding the forming yarn in the yarn forming region, said apparatus comprising:

interrupting means for interrupting the feeding of fibers to the yarn forming region by the fiber feed means,

a movable cover part for closing a housing around the yarn forming region during normal spinning operations,

cover part moving means for exposing the yarn forming region by moving the cover part of the spinning unit to an open position,

yarn end return means for returning a previously formed yarn end portion to a predetermined intermediate position adjacent the yarn forming region,

yarn end transfer means for transferring the yarn end portion from the intermediate position to the yarn forming region while activating the fiber feeding means to supply individ-

ual fibers to the yarn forming region to piece up with the yarn end portion,

and yarn withdrawal activating means for activating the yarn withdrawal means to withdraw the yarn end portion and the pieced together newly forming yarn.

4,563,873

APPARATUS FOR CONTROLLING PRODUCTION IN A SPINNING MACHINE

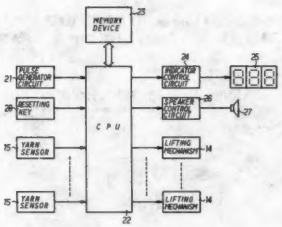
Takuzo Tooka, Toyoake, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Oct. 19, 1983, Ser. No. 543,256

Claims priority, application Japan, Oct. 21, 1982, 57-185298

Int. Cl.⁴ D01H *13/24, 9/14*

U.S. Cl. 57—264 **6 Claims**



1. An apparatus for controlling production in a spinning machine having a plurality of spinning stations each having a sliver can thereat, comprising:

a pulse generating circuit for generating pulse signals cyclically in synchronization with the yarn spinning operation at each of said spinning stations, each pulse signal corresponding to a unit length of yarn spun at any one of said spinning stations;

detecting means at each of said spinning stations for detecting normal passage of said yarn spun at the station, said detecting means being energized by the absence of said spun yarn to provide a detector signal when, and for the period during which the yarn is absent in its normal course of passage at the station;

respective warning means for each said station; and

control circuit means comprising a memory for storing a preset limit on the quantity of sliver consumption at each said spinning station, said limit substantially corresponding to the sliver capacity of said sliver can at the station, and central processing means connected to said pulse generating circuit and to each of said detecting means for receiving said pulse signals and said detector signals therefrom, said central processing means having means for computing the actual quantity of sliver consumption at each said spinning station by counting said pulse signals and, for each said station, respectively, subtracting from said count the number of pulse signals generated during each said time period when said detector signals are received from said detecting means at the station, said control circuit further having means providing a signal for energizing that one of said warning means associated with any one of said spinning stations when said computed sliver consumption at said one station attains said preset limit for the station.

4,563,874

DRIVING GEAR OF ROTOR TYPE OPEN END FINE SPINNING MACHINE

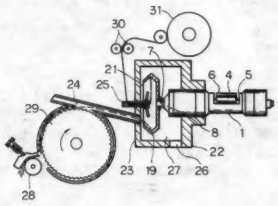
Junzo Hasegawa; Susumu Kawabata; Nobuharu Mimura, and Masao Kitano, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Oct. 18, 1983, Ser. No. 543,512

Claims priority, application Japan, Nov. 1, 1982, 57-193060

Int. Cl.⁴ D01H *1/12, 7/882*

U.S. Cl. 57—406 **6 Claims**



1. A rotational driving mechanism for a yarn spinning machine, said rotational driving mechanism comprising:

(a) a rotor comprising a cavity therein and an opening in communication with said cavity to permit fiber to be introduced therethrough into said cavity and mounted to be rotated for forming the fibers into a fiber bundle due to the rotation of said rotor;

(b) means disposed towards said opening for forming a first passage to feed fiber into said chamber;

(c) means disposed towards said opening for forming a second passage to extract yarn from said fiber bundle within said cavity;

(d) a rotation shaft coupled to rotate said rotor;

(e) a drive shaft driven at a first relatively low rotational speed;

(f) speed multiplying means interposed between said rotation shaft and said drive shaft for rotating said rotor at a second, relatively high speed;

(g) a cover disposed about said rotor and said rotational shaft, and having an exhaust port; and

(h) means for providing an air flow along a path within said cover to be exhausted through said exhaust port, whereby the fiber is transported through said first passage and into said chamber, said air flow directed about said rotational shaft to eliminate the friction heat caused by the rotation of said rotor.

4,563,875

COMBUSTION APPARATUS INCLUDING AN AIR-FUEL PREMIXING CHAMBER

Werner E. Howald, 5970 Crabtree La., Cincinnati, Ohio 45243

Continuation of Ser. No. 377,128, May 11, 1982, which is a continuation of Ser. No. 93,260, Nov. 13, 1979, which is a continuation of Ser. No. 877,897, Feb. 15, 1978, which is a division of Ser. No. 707,326, Jul. 21, 1976, Pat. No. 4,084,371, which is a continuation of Ser. No. 491,611, Jul. 24, 1974, abandoned. This application Mar. 21, 1985, Ser. No. 714,475

Int. Cl.⁴ F02C *9/00;* **F02G** *3/00*

U.S. Cl. 60—39.23 **4 Claims**

1. A combustor for generating a hot gas stream by the combustion of fuel in a pressurized air stream, said combustor comprising:

a housing;

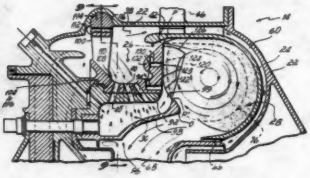
a combustion zone therein;

a plurality of radially spaced air-fuel premixing chambers each having an upstream end and opening downstream into said combustion zone;

means for injecting fuel into said premixing chambers at said upstream end independently of each other; and

a compressed air inlet plenum surrounding said premixing chambers and separated therefrom by baffles, said plenum communicating with said premixing chambers through openings in said baffles to generate a substantially homogeneous vapor-phase air-fuel premixture in each of said premixture chambers;

said plenum further communicating with said combustion zone through a plurality of radially spaced orifices adjacent the outer periphery of said baffles providing for the entry of main stream outwardly circumferential of each of said premixing chambers at the downstream end thereof;



said premixture entering said main air stream and having a substantial tangential gas flow velocity component when introduced therein such that said air-fuel premixture is substantially instantaneously intermixed into said main air stream to generate a combustible air-fuel mixture for burning in said combustion zone;

the main air streams being radially spaced and having a vector component of flow effective to generate overlapping vortical recirculation zones of burned gases.

4,563,876

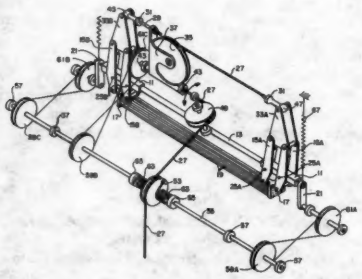
LINEAR OUTPUT NITINOL ENGINE

Ridgway M. Banks, 7411 Park Vista, El Cerrito, Calif. 94530

Filed Feb. 25, 1985, Ser. No. 704,660

Int. Cl.[4] F03G *7/06*

U.S. Cl. 60—527 **5 Claims**



1. A linear output nitinol engine comprising

an external support framework for said engine including a pair of parallel fluid baths in the lower end thereof and an internal bridge structure,

a wire transport mechanism including a pair of pivot blocks secured to the opposite ends of a compression member, a pair of identical linkage levers journalled between each of their ends at the same pivot points to each of the pivot blocks, a loom secured to the lower ends of each of said pair of linkage levers, a multiplicity of nitinol wires strung between said looms, and a power takeoff block secured to the top ends of each of said pair of linkage levers,

a pair of throw over arms supporting the opposite ends of said compression member, said throw over arms journalled to reciprocate the looms and wires disposed on the lower ends of said parallel linkage levers into and out of said parallel baths,

a pulley journalled in a flip-flop supporting bracket mounted on said bridge structure and arranged to reciprocate in a manner whereby a tangent line to the top of said pulley continually intersects the power takeoff points on said power takeoff blocks,

a power takeoff means including a tension member disposed on said above-described tangent line secured between the power takeoff point on one of said power takeoff blocks and said pulley supporting bracket, and a power output cable secured to and extending from the power takeoff point on the other of said power takeoff blocks and around said pulley to said load,

timing means for synchronizing said throw over arms and the flip-flop of said pulley, and

means for storing energy extracted from said power output cable for biasing the timing means.

4,563,877

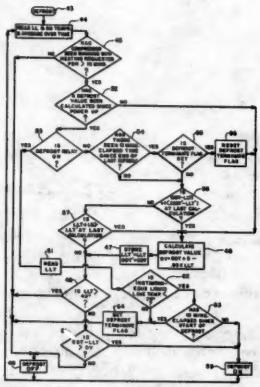
CONTROL SYSTEM AND METHOD FOR DEFROSTING THE OUTDOOR COIL OF A HEAT PUMP

James R. Harnish, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jun. 12, 1984, Ser. No. 619,957

Int. Cl.[4] F25D *21/06*

U.S. Cl. 62—80 **16 Claims**



1. In a heat pump having an outdoor coil through which refrigerant flows and absorbs heat from outdoor ambient air, a defrost control system for the outdoor coil comprising:

a first temperature sensor for sensing the outdoor ambient temperature;

a second temperature sensor for sensing a temperature which is related to the temperature of the outdoor coil;

control means responsive to said first and second temperature sensors under clean coil conditions for determining a Defrost Value which is the difference that will exist between the two sensed temperatures under frosted coil conditions when defrosting will be required;

and defrost means, controlled by said control means, for defrosting the outdoor coil when the Defrost Value is reached,

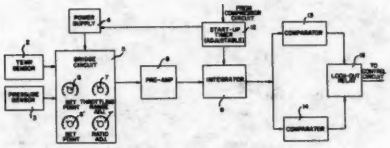
said control means functioning, before defrosting occurs, to recalculate the Defrost Value any time there is a predetermined change in sensed temperatures, which will be the result of changes in weather conditions.

4,563,878

SUPER-HEAT MONITORING AND CONTROL DEVICE FOR AIR CONDITIONING REFRIGERATION SYSTEMS

Richard A. Baglione, 2220 Park Ave., Apt. #15, Santa Clara, Calif. 95050

Filed Dec. 13, 1984, Ser. No. 681,030
The portion of the term of this patent subsequent to Mar. 19, 2002, has been disclaimed.
Int. Cl.[4] F25B *41/00*
U.S. Cl. 62—115 18 Claims



1. Apparatus for quantitatively monitoring the amount of super-heat contained in the refrigerant vapor of an air conditioning refrigeration system and locking-out the refrigeration system in response to sustained variation for longer than a selected interval of the super-heat above or below predetermined quantitative limits defining a "deadband" comprising:

(a) means for independently sensing the temperature and pressure of the refrigerant vapor and reflecting the sensed values of the temperature and pressure as values of electrical resistance;

(b) a power supply adapted to provide a predetermined regulated output;

(c) a bridge circuit connected to said power supply and to said temperature and pressure sensors and responsive to said values of electrical resistance and calibrated to balance said values of electrical resistance to produce a predetermined electrical output signal correlated quantitatively to said super-heat;

(d) a preamplifier connected to receive said predetermined electrical output signal from said bridge circuit;

(e) a preamplifier bias circuit connected to receive the output from said preamplifier, said preamplifier bias circuit being calibrated to produce a zero voltage output from said preamplifier when said bridge circuit produces said predetermined electrical output signal;

(f) an integrator circuit connected to receive the output signal of the preamplifier bias circuit and adapted to produce either a positive or negative output when said super-heat varies from said predetermined value;

(g) a pair of comparator circuits connected to receive the output from said integrator circuit and adapted to produce an output signal through one or the other of two output circuits depending upon whether the output from said integrator is positive or negative and of a predetermined value; and

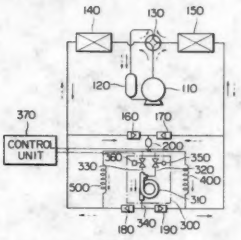
(h) lock-out means responsive to variations in said bridge circuit output above or below said predetermined quantitative limits whereby lock-out timing becomes a function of the amount that said predetermined quantitative limits of super-heat are exceeded.

4,563,879

HEAT PUMP WITH CAPILLARY TUBE-TYPE EXPANSION DEVICE

Hiroaki Hama; Masami Imanishi, both of Wakayama, and Naoki Tanaka, Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1985, Ser. No. 736,357
Claims priority, application Japan, May 23, 1984, 59-106736; May 23, 1984, 59-106737
Int. Cl.[4] F25B *13/00*
U.S. Cl. 62—160 4 Claims



1. A heat pump apparatus comprising:

a compressor;

a first heat exchanger connected to the discharge side of said compressor;

a second heat exchanger connected to the suction side of said compressor;

a main capillary tube connected between said first heat exchanger and said second heat exchanger;

adjustable means for cooling refrigerant flowing through said main capillary tube;

a solenoid valve connected to the intake side of said main capillary tube;

means for controlling the opening and closing of said solenoid valve in accordance with operating conditions;

an auxiliary cooling capillary tube which is connected in parallel with said main capillary tube between said first heat exchanger and said second heat exchanger and which has a higher resistance to flow than said main capillary tube; and

an auxiliary heating capillary tube which is connected in parallel with said main capillary tube and said auxiliary cooling capillary tube between said first heat exchanger and said second heat exchanger and which has a higher resistance to flow than said main capillary tube.

4,563,880

ICE-CREAM MACHINE FOR FAMILY USE

Alberto Cipelletti, Guardamiglio, Italy, assignor to Firm Alberto Cipelletti, Guardamiglio, Italy

Filed Aug. 2, 1984, Ser. No. 637,110
Claims priority, application Italy, Aug. 4, 1983, 22591/83[U]
Int. Cl.[4] A23G *9/00*
U.S. Cl. 62—234 1 Claim

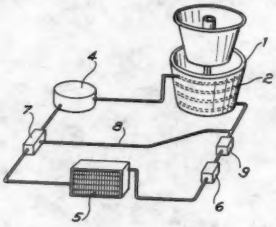
1. An ice-cream making machine for family use; wherein the ice-cream machine includes an integral refrigerating unit having an evaporator, an expansion nozzle, a condenser and a compresser connected to one another in series by a refrigerant line; the evaporator including a container with coils therein which container retains a removable whisking vessel having the ice-cream therein which whisking vessel is cooled by the evaporator, the improvement characterized by:

an auxiliary duct connected to the refrigerant line upstream of the expansion nozzle and downstream of the evaporator for receiving hot refrigerant from the evaporator,

a solenoid valve disposed in the refrigerant line between the condenser and compressor; the solenoid valve having a first mode of operation wherein condensed, cool refriger-

ant flows from the compressor to the condenser, and a second mode of operation wherein uncondensed, hot refrigerant flows from the compressor to the evaporator to feed hot refrigerant to the evaporator, wherein ice which has formed between the container of the evaporator and the whisking vessel is melted freeing the whisking vessel for easy removal from the container;

pushbutton means for operating the solenoid to switch the solenoid from the first mode to the second mode;



timing means for limiting duration of the solenoid valve operation in the second mode to a time just sufficient to melt the ice disposed between the container and whisking vessel, and

a check valve positioned between the evaporator and capillary for preventing refrigerant from flowing towards the condenser.

4,563,881

CONTAINER FOR COOLING A COOLED COMMODITY

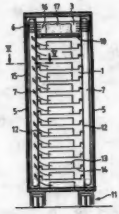
Peter Bucher, Pfäffikon, Switzerland, assignor to Firma Heinrich Bucher, Fällanden, Switzerland

Filed Aug. 6, 1984, Ser. No. 638,015

Claims priority, application Switzerland, Aug. 8, 1983, 4302/83

Int. Cl.[4] F25D *3/08*

U.S. Cl. 62—457 **5 Claims**



1. A container for cooling a commodity uniformly over the entire surface thereof using a coolant comprising a coolant storage part, a commodity storage part, means for separating said coolant storage part from said commodity storage part and a plurality of self contained heat pipes each having a cold part located in said coolant storage part and a hot part located in said commodity storage part for increasing the heat flow between said coolant storage part and said commodity storage part wherein both of the hot and cold parts of the said plurality of heat pipes are provided with conducting surfaces which improve the heat transfer of the heat pipes wherein the conducting surface for said hot part comprises a container wall in the commodity storage part which is in contact with the hot part of said plurality of heat pipes and the conducting surface for said cold part comprises a carrier for the coolant wherein the cold part of the heat pipe is bent in the coolant part and extends below the carrier for the coolant.

4,563,882

AIR COOLING TYPE ABSORPTION COOLER

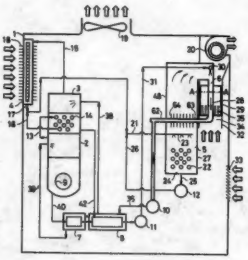
Yoshifumi Kunugi; Shigeo Sugimoto, both of Ibaraki; Kisaburo Minakawa, Tsuchiura, and Kenzi Machizawa, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 20, 1985, Ser. No. 746,666

Claims priority, application Japan, Jun. 20, 1984, 59-125107; Sep. 28, 1984, 59-201606

Int. Cl.[4] F25B *15/00*

U.S. Cl. 62—476 **14 Claims**



1. An air cooling type absorbing cooler comprising:

a first generator with a heating source into which is poured absorbing solution composed by mixing lithium bromide as an absorbent with water as a refrigerant;

a second generator into which said absorbing solution is poured and in which the refrigerant vapor generated by said first generator is used as a heating source;

a condenser for cooling with air the refrigerant generated by said first and second generators;

an evaporator for producing a chilled water by evaporating the refrigerant from said condenser;

an air cooling type absorber which uses air as a cooling source for producing dilute absorbing solution containing more refrigerant by making the absorbing solution which is returned from said first and secohd generators absorb the refrigerant vapor from said evaporator;

a solution pump for supplying said dilute absorbing solution generated by said air cooling type absorber to said first and second generators; and

a heat exchanger for exchanging heat between said dilute absorbing solution supplied from said absorber to said first and second generators and the absorbing solution which is returned from said first and second generators to said absorber;

said air cooling type absorber including an absorbing pipe for the passage of said absorbing solution and refrigerant vapor and a passage provided outside of said absorber through which the air which is to cool said absorbing solution and said refrigerant vapor may pass and so constituted as to exchange heat between said cooling air at the inlet side and said absorbing solution and refrigerant vapor at the outlet side, and between said cooling air at the outlet side and said absorbing solution and refrigerant vapor at the inlet side.

4,563,883

SPECIMEN IMMERSING DEVICE

Hellmuth Sitte, Siefeld, Austria, assignor to C. Reichert Optische Werke AG, Vienna, Austria

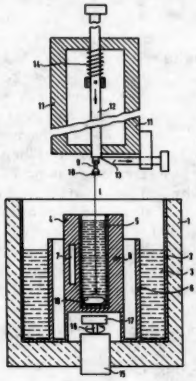
Filed Sep. 17, 1984, Ser. No. 651,381

Int. Cl.[4] F25B *19/00*

U.S. Cl. 62—514 R **11 Claims**

1. A device for immersing a specimen into a cryogenic

cooling liquid comprising a holder for carrying a specimen, means for injecting said holder at a predetermined velocity



downwardly into the liquid, and means for rotating the holder while in said liquid.

4,563,884

CIRCULAR KNITTING MACHINE FOR THE PRODUCTION OF GOODS WITH ENMESHED FIBERS

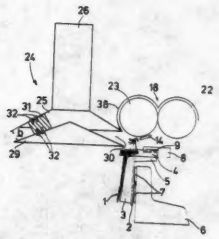
Klaus Kunde, Kohlberg; Helmut Grimm, Neckartailfingen, and Lorenz Becker, Aichtal, all of Fed. Rep. of Germany, assignors to Sulzer Morat GmbH, Fed. Rep. of Germany

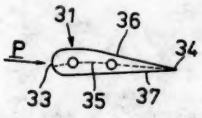
Filed Dec. 22, 1983, Ser. No. 564,413

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1982, 3247957

Int. Cl.⁴ D04B *9/14, 35/32*

U.S. Cl. 66—93 **7 Claims**





1. Circular knitting machine for the production of goods with enmeshed fibers, having a needle cylinder carrying knitting tools, having at least one card comb means for combing fibers into the knitting tools, having an exhaust hood disposed above the needle cylinder and intended for the removal of loose fibers, and having at least one component disposed at least partially within of the exhaust hood and fastenable thereto by means of at least one strut, characterized in that the strut (31) has an airfoil configuration.

4,563,885

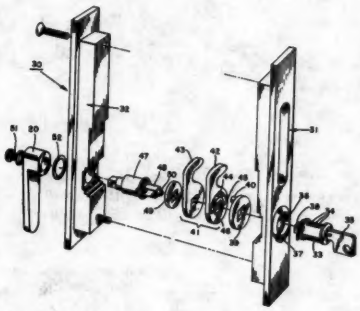
PATIO SLIDING DOOR LOCK ASSEMBLY AND METHOD

Roy H. Madden, Burlington, N.C., assignor to Excalibur Locks, Inc., Alamance County, N.C.

Continuation of Ser. No. 366,762, Apr. 8, 1982, abandoned. This application May 24, 1984, Ser. No. 613,763

Int. Cl.⁴ E05B *65/08*

U.S. Cl. 70—97 **6 Claims**



1. A key operated lock assembly for a patio sliding door having first and second locking positions for engaging a catch means comprising: a cylinder means, a cam wheel means, said cam wheel means including a lug member, said cam wheel means joined to said cylinder means, said cylinder means defining a key receiving slot, a latch member, said latch member for engaging said catch means, said latch member having a semi-circular lug slot, said lug member slidably received in said semi-circular lug slot, an independent rotatable handle member, said handle member rigidly joined to a shaft, said shaft joined to said latch member for rotation therewith, said cylinder means including a tumbler element and a shoulder stud, a first support means, said cylinder means mounted on said first support means, said first support means defining a plurality of tumbler receiving grooves, said shaft having an extension means, said extension means including an axle member, said shoulder stud receiving said axle member, said cylinder means being rotatable to a first locking position by a key for moving said lug member to one end of said semi-circular slot urging said latch member into engagement with the catch means whereat said handle member cannot be rotated and said cylinder means being rotatable to a second locking position by a key for moving said lug member to said other end of said semi-circular slot whereat said handle member can be rotated to disengage said latch member from said catch means.

4,563,886

LOCKING ARRANGEMENT FOR SECURING DOORS

Karl Kletzmaier, Ottensheim, and Gunther Krippner, Linz, both of Austria, assignors to ELEKTRONIKBAU Krippner & Kletzmaier Gesellschaft m.b.H. & Co., Linz, Austria

Filed May 26, 1983, Ser. No. 498,309

Claims priority, application Austria, Jun. 7, 1982, 2208/82

Int. Cl.⁴ E05B *47/00*

U.S. Cl. 70—118 **11 Claims**

1. A locking arrangement for securing a door having a door frame, which comprises

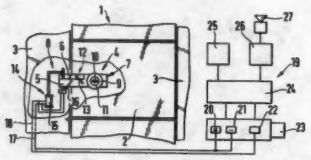
(a) a lock bolt and a safety bolt mounted for displacement relative to the door,

(b) a first locking device associated with the lock bolt and having

(1) a key-operated locking mechanism for locking the lock bolt,

(c) a second locking device associated with the safety bolt and having

(1) a latch element for engaging the safety bolt,
(2) a remote-controllable unlocking drive for the latch element and
(3) a drive device effective in an opening direction and cooperating with the safety bolt for adjustment therewith into a locking position and into a starting position allowing for the displacement of the safety bolt, respectively,



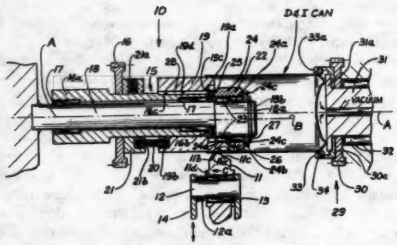
(d) a positioning means associated with the lock bolt, and
(e) a circuit control arrangement for the remote-controllable unlocking drive,
(l) the lock bolt positioning means assuming a circuit switching position when the lock bolt is open, wherein the remote-controllable unlocking drive for the latch element is actuated by the control arrangement to release the latch element.

4,563,887

CONTROLLED SPIN FLOW FORMING

Renato J. Bressan; Andrew Halasz, both of Crystal Lake, Ill., and Lawrence S. Maccherone, Severna Park, Md., assignors to American Can Company, Greenwich, Conn.

Filed Oct. 14, 1983, Ser. No. 542,309
Int. Cl.[4] B21D *17/04*
U.S. Cl. 72—84 **4 Claims**



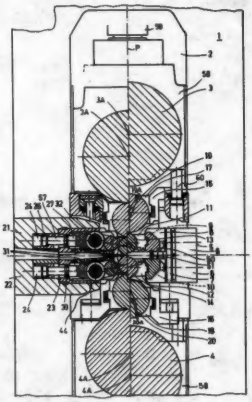
1. An apparatus for holding and rotating a thin wall hollow cylindrical container about its axis whereby same is supported with a straight wall open end for receiving a spin flow forming tool to neck and flange that end comprising:
a holder for engaging the inside of the straight wall open end of the container being mounted for driven rotary motion about and axial motion along the axis of the container and having a resilient means located thereon to bias said holder along that axis and into the open end of the container,
a roller with a peripheral deforming nose positioned externally of the container and mounted upon a mandrel for free rotary and controlled radial movement toward and away from the sidewall of the container, said roller being biased for axial movement along its mandrel and said roller mandrel being located parallel to the axis of the container but external thereof,
a sleeve member within the container and supported on another axis positioned parallel to the axis of the container but offset therefrom a predetermined distance and said sleeve member supported for free rotary motion in a predefined fixed axial position inwardly of the container relative to said holder for engagement with the inside wall of the container open end and abutment with the inward face of said holder to define a plane therebetween near which the nose of said roller first contacts the straight wall open end for spin flow forming the contacted wall inwardly when said roller is moved toward said container axis against the straight wall and between said holder and said sleeve member, said sleeve member having a flat circumferential chamfer at its end opposed to the inward face of said holder and said roller having a peripheral flat surface and also having a sloped trailing surface opposed to said chamfer, said container having a portion of its open end supported by said holder so that said open end portion extends across said plane, and said roller being positioned opposite the portion of the container which extends across said plane, whereby during radial inward movement of the roller into said plane the biased holder forces the biased roller toward the axially fixed sleeve while the chamfer on the axially fixed sleeve cooperates with the opposed sloped surface of the roller to shape a cone on the can as the roller continues its radial inward movement as part of the necking operation performed on the can.

4,563,888

SIX-HIGH ROLL STAND WITH BRACED AND REMOVABLE WORKING ROLLS

Wilfried Bald, Hilchenbach; Hans Römmen, Dormagen, and Erich Stoy, Ratingen, all of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag AG, Dusseldorf, Fed. Rep. of Germany

Filed Oct. 3, 1984, Ser. No. 657,415
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1983, 3335857
Int. Cl.[4] B21B *29/00*
U.S. Cl. 72—243 **13 Claims**



1. A roll stand comprising:
a frame having a pair of sides spaced apart transversely of a workpiece travel direction and formed with respective throughgoing windows aligned transversely of the direction and a pair of vertically spaced traverses extending horizontally perpendicular to the direction between the frame sides;
two outer backup rolls centered on parallel axes transverse to the direction and spaced vertically apart and each having two journal blocks vertically displaceable and guided in the windows of the respective frame sides;
respective upper and lower guide elements limitedly verti-

cally displaceable in the windows between the outer-roll journal blocks;

two inner backup rolls centered on parallel axes between and coplanar with the outer-roll axes and each having two journal blocks vertically displaceable and guided in the respective guide elements;

respective pairs of positioning actuators in the windows vertically between the respective inner-roll blocks, the actuators of each pair confronting each other in the direction and being oppositely braced in the direction against the respective frame side;

respective supports carried on and between the actuators of each pair;

respective second upper and lower guide elements limitedly vertically displaceable on the supports, the positioning actuators being expansible and contractile to displace the guide elements in the direction;

two working rolls centered on parallel axes between and parallel to the other roll axes and each having two journal blocks fitted to and axially slidable in the respective second guide elements, whereby the positioning actuators can position the working rolls in the direction;

an insert carried in the traverses axially between and secured to the positioning actuators upstream of the roll-axis plane;

respective rows of bracing rollers carried on the insert and extending axially along the working rolls between same and the traverses, the insert, bracing rollers, and upstream positioning actuators forming an integral bracing unit, at least one of the windows being shaped such that the bracing unit can be withdrawn axially through the respective frame side; and

means including respective rows of bracing actuators braced in the direction between the rollers and the traverses for displacing the rollers through at least 50 mm in the direction and pressing the rollers opposite to the direction against the respective working rolls.

4,563,889

SCREW PRESS

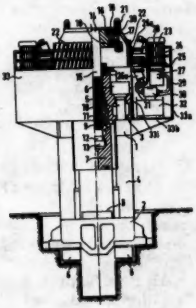
Hubert Landwehr, Neuss, Fed. Rep. of Germany, assignor to SMS Hasenclever Maschinenfabrik GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 13, 1984, Ser. No. 589,030

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1983, 3309594; Apr. 14, 1983, 3313472

Int. Cl.[4] B21J *9/18*

U.S. Cl. 72—454 **5 Claims**



1. A screw press comprising:

a press frame;

an upper cross member on said frame;

a platform on said frame surrounding said upper cross member;

a press spindle;

a flywheel rotatably mounted on said frame;

a friction coupling operatively connecting said flywheel to said spindle so that rotation of said flywheel rotatably drives said spindle;

an internally screw threaded nut non-rotatably mounted in said upper cross member;

an external screw thread on said spindle in axially displaceable screw threaded engagement with said nut;

external gear teeth on said flywheel;

a plurality of external gear toothed pinions rotatably supported on said platform operatively engaging said external teeth on said flywheel so that rotation of said pinions rotatably drives said flywheel;

said external teeth on said flywheel having an axial length at least as great as the maximum press stroke plus the axial length of said teeth on said pinions;

respective oil-hydraulic axial piston motor means mounted on said platforms and operatively connected to each pinion for rotatably driving each pinion; and

a respective fluid supply means for driving each piston motor means comprising,

a separate controllable hydraulic pump mounted on said platform operatively connected to a respective axial piston motor means for pumping oil-hydraulic fluid to drive said motor means, said pump being reversible with respect to the fluid flow direction to operate said motor means to drive said respective pinion in opposite directions, and

an electric motor for each pump mounted on said platform operatively connected to a respective pump to drive said respective pump.

4,563,890

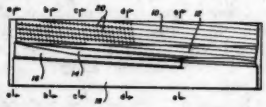
CUT-OFF STYLE, ROLL THREAD FLAT DIES

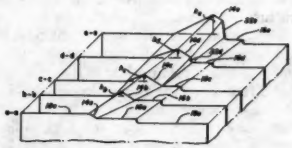
Joseph F. Dickson, Boylston, Mass., assignor to Litton Industrial Products, Inc., Holden, Mass.

Filed Jan. 27, 1984, Ser. No. 574,411

Int. Cl.[4] B21H *3/06*

U.S. Cl. 72—469 **7 Claims**





1. A cut-off style, roll thread flat die for use with a matched cut-off style, roll thread flat die to form a threaded, pointed fastener such as a gimlet point screw, said cut-off style, roll thread flat die having a top operating surface extending horizontally comprising means to form body-threads and point threads in said fastener, a slug traction ramp to provide controlled rotation for the cut-off slug and a slug extrusion taper to provide proper extrusion of the cut-off slug from the fastener, said slug traction ramp and said slug extrusion taper extending in side-by-side relation from a start location, past a transition location to a termination location,

said slug traction ramp and said slug extrusion taper having a common edge and thereby being laterally continuous from said start location to said transition location,

said slug extrusion taper forming an obtuse angle with said slug traction ramp from said start location to said transition location,

the edge of said slug extrusion taper adjacent said slug traction ramp being substantially vertically spaced above the edge of said slug traction ramp adjacent said slug extrusion taper from said transition location to said termination location, said spacing continuously increasing from said transition location to said termination location,

said slug extrusion taper having a selected and constant angle of inclination,

said slug traction ramp having a selected and constant orientation, and

said slug traction ramp and extrusion taper being oriented relative to each other so that the cut-off slug is controllably rotated by the slug traction ramp as the fastener is threaded and the slug cut from the fastener body.

4,563,891

PIPE BENDING MACHINE

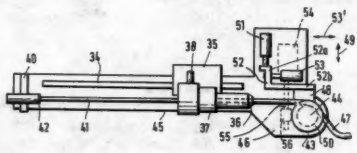
Rigobert Schwarze, Olpener Str. 460-474, 5000 Köln 91, Fed. Rep. of Germany

Filed Nov. 4, 1983, Ser. No. 549,884

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1982, 3240799

Int. Cl.⁴ B21D *7/04, 9/05*

U.S. Cl. 72—149 **11 Claims**



1. A pipe bending machine comprising a supporting frame, defining an upper side, two opposite longitudinal sides and a head face, a flat beam secured to said upper side of the frame and having a projecting portion extending forwardly in longitudinal direction of the frame past said head face to leave free space underneath; a feeding carriage movable along an upper edge of one longitudinal side of the frame; a collet mounted on the carriage for holding a pipe; a bending table of a rotation symmetrical configuration arranged on said projecting portion of the flat beam to turn about an upright axis of rotation; a bending die secured on the bending table; a clamping jaw and a slide bar arranged opposite the bending die to cooperate therewith; first driving means arranged on said frame at said one longitudinal side thereof, said first driving means being coupled to said slide bar to move the same in two opposite radial directions relative to said upright axis of rotation and in the longitudinal direction of the frame; second driving means including a hydraulic motor having a shaft provided with a worm shaft extending transversely to the longitudinal direction of the frame, and the bending table being provided with a circumferential worm gear engaging said worm shaft; said first driving means for the slide bar including a hydraulic cylinder and piston unit which is arranged above said hydraulic motor to act in said opposite radial directions, and an additional hydraulic cylinder and piston unit arranged above the hydraulic motor to act in said longitudinal direction; said bending table including an outer housing and a sleeve within said housing, said sleeve being constructed as a hydraulic cylinder in which a double sided piston is arranged for reciprocating axial movement, the piston being provided with an upwardly directed piston rod projecting out of the sleeve; said bending die being assembled of an upper die part and a lower die part separated by a horizontal separation plane, the lower die part being connected to a top part of said sleeve and the upper die part being connected to a projecting part of said piston rod, and the bending die being formed in the region of its separating plane with a circumferential groove for accommodating a pipe.

4,563,892

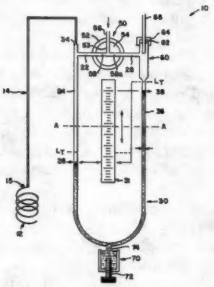
TOTAL DISSOLVED GAS PRESSURE MEASURING DEVICE

Brian G. D'Aoust, 7595 Finch Rd. NE., Bainbridge Island, Wash. 98110

Filed Jul. 24, 1984, Ser. No. 634,147

Int. Cl.⁴ G01N *7/10*

U.S. Cl. 73—19 **17 Claims**



1. A total dissolved gas pressure measuring device for liquids, comprising:

(a) a minimal internal volume partly bounded by a gas permeable membrane formed so as to separate the liquid from said minimal internal volume,

(b) a connecting volume on the gas phase side of said membrane between said membrane and a pressure responsive means such that the volume thereof is as small as possible and resistant to hydrostatic pressure so that for changes in measured total gas pressure the changes in gas content of the internal volume space are also as small as possible,

(c) means for maintaining constancy of said internal volume on said gas phase side of said membrane, and

(d) a gas pressure measuring means connected to and partly bounding said internal volume space so as to define a closed connection, said gas pressure measuring means including a pressure sensitive surface to be contacted by said gas and said pressure measuring means also including a pressure responsive, visual read-out means for registering pressure exerted by said gas on said pressure sensitive surface.

4,563,893

METHODS AND APPARATUS FOR DETECTION AND IDENTIFICATION OF VOLATILE MATERIALS AND ODORS

Necmi Tanyolac, Bogazici University, Istanbul, Turkey, and John N. Labows, Horsham, Pa., assignors to Necmi Tanyolac, Istanbul, Turkey

Filed Apr. 22, 1983, Ser. No. 487,870

Int. Cl.⁴ G01N *31/06*

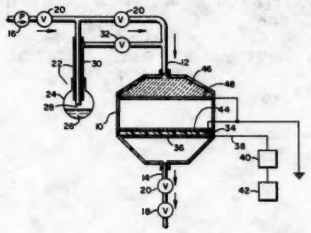
U.S. Cl. 73—23 **24 Claims**

1. An apparatus for the detection of odor comprising:

dielectric sensing means having a dielectric potential responsive to odor molecules adsorbed onto said sensing means, said sensing means being at least partially permeable to flow of gas,

carrier gas flow means for directing a substantially uniform

flow of carrier gas into contact with and through said sensing means, and



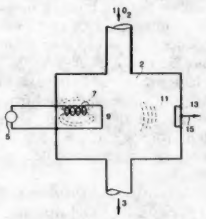
means for detecting the dielectric potential of said sensing means.

4,563,894

PARAMAGNETIC OXYGEN SENSOR

Henry E. Karrer, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 21, 1984, Ser. No. 642,972
Int. Cl.[4] G01N *29/02*; G01R *33/12*; G01F *1/66*
U.S. Cl. 73—24 **11 Claims**



1. Apparatus for measuring the concentration of a paramagnetic gas in a gaseous mixture, said apparatus comprising:

a test chamber;

gas inlet and outlet means coupled to the test chamber for introducing the gaseous mixture into the test chamber;

first means for generating a periodically excited magnetic field, said first means disposed within the test chamber for providing a region of high magnetic field intensity gradient, said paramagnetic gas responsive to said magnetic field and accelerated towards said region of high magnetic field intensity gradient thereby generating an acoustic wave, the acoustic wave propagating throughout the gaseous mixture within the test chamber; and

detector means disposed on the side wall of said test chamber for detecting said acoustic wave and providing an output signal, the amplitude of said output signal indicative of the concentration of said paramagnetic gas in the gaseous mixture.

4,563,895

APPARATUS AND METHOD FOR ULTRASONIC DETECTION OF INCLUSIONS IN MOLTEN METALS

Charles E. Eckert, Plum Boro, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

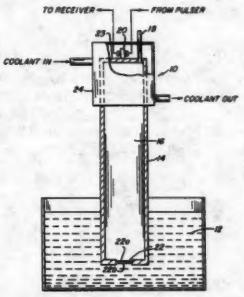
Filed Aug. 20, 1984, Ser. No. 642,488
Int. Cl.[4] G01N *29/02*
U.S. Cl. 73—61 R **20 Claims**

1. A probe for carrying ultrasonic waves between a transducer and a body comprising a molten metal or alloy, said probe comprising

(a) a refractory shell, said shell being inert to molten metals,

(b) a coupling medium for carrying ultrasonic waves between a transducer and a window spaced from said transducer, said coupling medium comprising a liquid metal contained within said shell, the acoustic attenuation factor for ultrasonic waves between the transducer and coupling medium being less than about 3 dB,

(c) a window for carrying ultrasonic waves between said



coupling medium and said body, said window being supported by said shell and comprising

(1) an interior surface portion contacting said coupling medium, the acoustic attenuation factor for ultrasonic waves between said coupling medium and said interior surface portion being less than about 3 dB, and

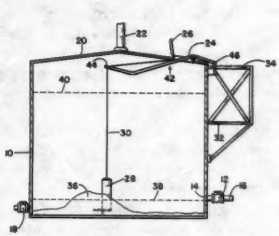
(2) an exterior surface portion wettable by said body, the acoustic attenuation factors for ultrasonic waves between said interior and exterior surface portions and between said exterior surface portion and said body each being less than about 3 dB.

4,563,896

GAUGER'S AID FOR USE IN SAMPLING BOTTOM SEDIMENT CONDITIONS IN OIL STORAGE TANKS

Lewis R. Arnold, Nowata, Okla., assignor to Bigheart Pipe Line Corporation, Reno, Nev.

Filed Nov. 9, 1983, Ser. No. 549,900
Int. Cl.[4] G01F *23/00*
U.S. Cl. 73—290 R **5 Claims**



1. A gauger's system for use in sampling bottom sediment conditions in an oil storage tank in which a sample is taken through a thief latch opening in the tank top, the opening being adjacent the tank peripheral edge, comprising:

a thief having means for taking a sample of bottom sediment;

a rope, said thief being secured to one end thereof;

a tool having an elongated slender body member of a length to extend through a thief hatch opening in a tank top and to at least about the central vertical axis of the tank for which it is dimensioned;

a forked member on the end of said tool body member dimensioned to be passed through a tank thief hatch opening, the forked member adaptable to slideably receive said rope having said thief at the end thereof; and

a handle member on the other end of said tool body member, the handle member extending transversely of said body member and configured to be engaged by the user to cause said body member to extend generally horizontally within a tank to permit the user to manipulate said rope to raise and lower said thief in a tank.

4,563,897

APPARATUS FOR MONITORING TOOL LIFE

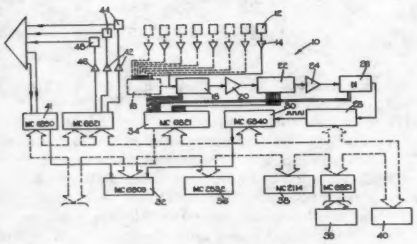
Arthur I. W. Moore, Melton Mowbray, England, assignor to Production Engineering Research Assoc., Melton Mowbray, England

Filed Jan. 12, 1984, Ser. No. 570,180

Claims priority, application United Kingdom, Jan. 12, 1983, 8300792

Int. Cl.⁴ G01N *29/04*

U.S. Cl. 73—587 **40 Claims**



1. A method of monitoring the operating condition of a cutting tool during machining of a workpiece comprising the steps of

(a) monitoring the level of vibration of the tool on commencement of machining and generating a first signal representative of said monitored level,

(b) applying said first signal to a variable gain circuit means to provide a second signal which is a function of said first signal,

(c) adjusting the gain of said gain circuit means to adjust said second signal to a preselected value,

(d) generating a first reference value which is a preselected function of said preselected value and generating a second reference value representing a minimum reference level generated when the cutting tool commences machining a workpiece,

(e) storing said first and second reference values and a factor representing the adjusted gain of said gain circuit means,

(f) prior to commencing subsequent machining under the same or similar machining conditions, adjusting the gain of said gain circuit to said adjusted gain, and on commencement of said subsequent machining

(g) monitoring the level of vibration of the tool to generate a further second signal,

(h) comparing said further second signal with said first reference value and generating a first control signal in dependence on said further second signal level exceeding said reference value and generating a second control signal if the monitored level is less than the second reference value for a predetermined length of time;

whereby generation of the first control signal is indicative of a worn or defective cutting tool and generation of the second control signal is indicative of a broken or missing cutting tool.

4,563,898

ACOUSTIC MICROSCOPE

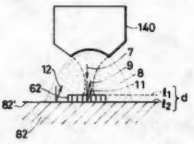
Hiroshi Kanda, Tokorozawa; Kageyoshi Katakura, Meguro, and Isao Ishikawa, Hino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 6, 1984, Ser. No. 586,806

Claims priority, application Japan, Mar. 7, 1983, 58-35828

Int. Cl.⁴ G01N *29/00*

U.S. Cl. 73—606 **8 Claims**



1. An acoustic microscope comprising:

an acoustic transducer which performs both generation and detection of acoustic wave beams passing from and to said transducer by way of an acoustic wave transmitting and receiving surface thereof,

a sample holding member which is positioned to oppose said acoustic wave transmitting and receiving surface of said transducer, so as to hold an object sample in an acoustic wave propagating medium disposed between said acoustic transducer and said sample holding member and providing behind the sample a layer of a material having an acoustic impedance unequal to that of the sample,

mechanical means for moving said sample holding member laterally in a plane transverse to the axis of said transducer so that first acoustic waves reflected from a front surface and a rear surface of the sample and second acoustic waves reflected from a surface of said sample holding member without reaching the sample are detected by said transducer, and

measuring means for measuring the amplitudes and the time periods of return of each of said first and second acoustic waves on the basis of the output signals of said transducer so as to determine the elastic physical quantities of said sample.

4,563,899

ULTRASONIC IMAGING APPARATUS USING TRANSDUCER CONTROL

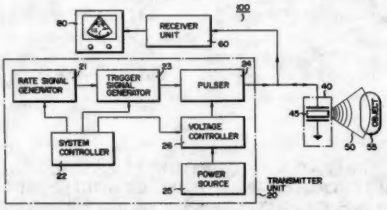
Kenichi Nakamura, Noda, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Jan. 29, 1985, Ser. No. 696,054

Claims priority, application Japan, Jan. 31, 1984, 59-15492

Int. Cl.⁴ G01N *29/06*

U.S. Cl. 73—626 **13 Claims**



1. An ultrasonic imaging apparatus comprising:

transducer means having a plurality of transducer elements arranged in an array for transmitting ultrasonic pulses toward an object under examination upon receipt of drive

pulses, and for receiving ultrasonic echoes reflected from the object, thereby producing echo signals;

transmitter means including generator means for generating rate pulses, generator means for generating trigger pulses in response to the rate pulses, source means for producing drive voltages for the transducer means, control means for controlling the drive voltages so as to obtain the drive pulses having a desirable mode, and pulser means for supplying to the transducer elements the drive pulses having the desirable mode upon receipt of the trigger pulses;

receiver means coupled to the transducer means for processing the echo signals so as to produce tomographic image signals; and

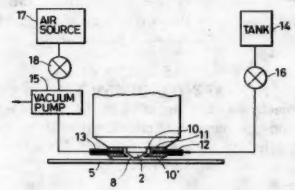
means for displaying tomographic images of the object scanned by the ultrasonic pulses based upon the tomographic image signals.

4,563,900

ACOUSTIC MICROSCOPE

Kunio Harada, Hachioji; Sumio Yamaguchi, Nishitama; Hiroshi Kanda, Tokorozawa; Isao Ishikawa, Hino, and Yuzuru Ohji, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 26, 1984, Ser. No. 603,937
Claims priority, application Japan, Apr. 27, 1983, 58-72897
Int. Cl.⁴ G01N *29/04*
U.S. Cl. 73—644 **4 Claims**



1. An acoustic microscope comprising:

means including an acoustic lens for projecting an acoustic wave onto a specimen and for receiving acoustic waves reflected from said specimen via said acoustic lens;

a specimen holder for supporting a specimen adjacent said acoustic lens;

scanning means for moving said acoustic lens and said specimen holder relative to each other to cause a scanning of said acoustic wave on said specimen; and

a ring-shaped member disposed between said acoustic wave projecting means and said specimen holder and having an annular space through which said acoustic lens projects so that a slight clearance space is formed between said acoustic lens and said ring-shaped member in which a fluid acoustic propagation medium is held by capillary action.

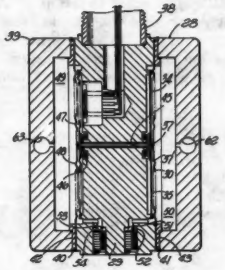
4,563,901

TRANSDUCER

Gurnam Singh, Riverside, Calif., assignor to International Telephone & Telegraph Corp., New York, N.Y.

Filed Sep. 9, 1983, Ser. No. 530,562
Int. Cl.⁴ G01L *7/08, 9/06*
U.S. Cl. 73—706 **4 Claims**

2. A differential pressure/static pressure dual unit comprising: a housing having a central hole therethrough; outer and inner substantially parallel diaphragms sealed around said housing on one side thereof; a third diaphragm sealed around said housing on the other side thereof in a position approximately parallel to said outer and inner diaphragms; a first fill fluid in compression between said third and inner diaphragms; a second fill fluid in compression between said outer and inner diaphragms; a differential pressure sensor having a sensor side and an underside; a static pressure sensor having a sensor side and an underside; a first passageway in said housing to conduct said second fill fluid from the space between said outer and inner diaphragms to the underside of said differential pressure sensor; a second passageway in said housing to conduct said



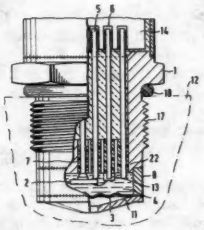
first fill fluid from the space between said third and inner diaphragms to the sensor sides of said differential pressure sensor and said static pressure sensor; and a third passageway in said housing to conduct atmospheric pressure to the underside of said static pressure sensor.

4,563,902

PRESSURE AND TEMPERATURE SENSOR

Rainer Köhnlechner, Schloss-Holte, Fed. Rep. of Germany, assignor to Ermeto Armaturen GmbH, Bielefeld, Fed. Rep. of Germany

Filed Apr. 12, 1984, Ser. No. 599,393
Int. Cl.⁴ G01L *9/06*
U.S. Cl. 73—708 **6 Claims**



1. A device for measuring pressure and temperature in a fluid system, said device comprising:

a housing having a pressure chamber and a non-pressurized chamber, said pressure chamber being connected to said non-pressurized chamber by borings;

electrical contacts and connecting posts that are located in said borings:

an electronic circuit that is located in the non-pressurized chamber of said housing and that is electrically connected to said electrical contacts;

a pressure sensor located in the pressure chamber of said housing and that is electrically connected to said electrical contacts;

a pressure transferring membrane that separates said pressure chamber from the fluid system;

an imcompressible, pressure transmitting medium that fills said pressure chamber; and

a temperature sensor located in said pressure chamber and electrically connected to the electronic circuit, said temperature sensor being continuously responsive to the tem-

perature of the pressure transmitting medium to adjust the output of the pressure measuring device.

4,563,903

PRESSURE SENSOR

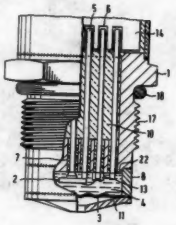
Rainer Köhnlechner, Peuzberg; Herbert Beeke, Hüllhorst, and Hans Suckow, Bielefeld, all of Fed. Rep. of Germany, assignors to Ermeto Armaturen GmbH, Bielefeld, Fed. Rep. of Germany

Filed Apr. 12, 1984, Ser. No. 599,395

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1983, 3313259

Int. Cl.[4] G01L *9/06*

U.S. Cl. 73—727 **8 Claims**



1. A device for measuring pressure in a fluid system, said device comprising:

a housing having a pressure chamber and a non-pressurized chamber, said pressure chamber being connected to said non-pressurized chamber by conical borings that are aligned substantially parallel to the longitudinal axis of said housing and that are arranged along a straight line, the diameter of said boring decreasing in the direction from the pressure chamber to the non-pressurized chamber;

electrical contacts and connecting posts that are located in said borings and that are insulated from the wall of the boring by a glass filling;

an electronic circuit that is located in the non-pressurized chamber of said housing and that is electrically connected to said electrical contacts;

a pressure sensor located in the pressure chamber of said housing and that is electrically connected to said electrical contacts;

a pressure transferring membrane that separates said pressure chamber from the fluid system; and

an incompressible, pressure transmitting medium that fills said pressure chamber.

4,563,904

EXCITATION CIRCUIT FOR ELECTROMAGNETIC FLOWMETER

Gottfried Geisler, and Jörg-Ulrich Breithaupt, both of Goettingen, Fed. Rep. of Germany, assignors to Fischer & Porter Company, Warminster, Pa.

Filed Sep. 12, 1984, Ser. No. 649,656

Int. Cl.[4] G01F *1/60*

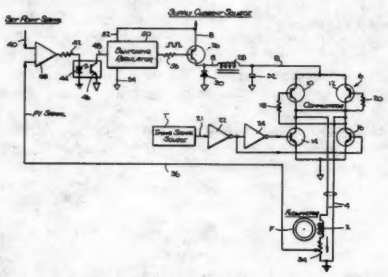
U.S. Cl. 73—861.12 **7 Claims**

1. An electromagnetic flowmeter provided with at least one field coil to establish an alternating magnetic field across a flow tube through which flows the fluid to be metered, and an excitation circuit for supplying current to said coil periodically of alternating polarity, and for maintaining the intensity of this current at a constant level, said circuit comprising:

A. a polarity-reversing commutator whose input is connected to a direct current source and whose output is connected through a cable to said coil to periodically supply current thereto of alternating polarity;

B. an actuatable switch interposed between said source and the input of the commutator;

C. a switching regulator coupled to said switch to actuate same, said regulator generating actuating pulses whose duty cycle depends on the magnitude of a control signal applied to the regulator;



D. means including a comparator for comparing a variable signal derived from the field coil proportional to the current flow therethrough with a set point to produce a control signal whose magnitude depends on the deviation of the variable signal from the set point; and

E. means to apply said control signal to the regulator to so vary the actuating pulse duty cycle as to maintain the intensity of the current flowing in the coil at a constant level.

4,563,905

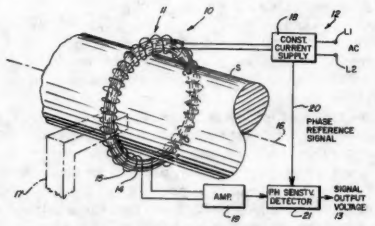
SHAFT TORQUEMETER

Sydney Himmelstein, Barrington Hills, Ill., assignor to S. Himmelstein and Company, Hoffman Estates, Ill.

Filed Aug. 27, 1984, Ser. No. 644,877

Int. Cl.[4] G01L *3/10*

U.S. Cl. 73—862.36 **8 Claims**



1. A torquemeter for measuring torque in a shaft having variable reluctance as a result of torque stresses developed therein, said torquemeter comprising:

an annular first coil constructed to be disposed coaxially about the shaft;

a second coil wound about the first coil coaxially of the annular axis of the first coil to be in space quadrature with said first coil;

means for mounting said coils coaxially about the shaft to include the shaft in the magnetic flux coupling path between said coils;

means for electrically exciting one of said coils to cause said one of said coils to comprise an excitation winding and the other of said coils to comprise a pickup winding, said coils being effectively uncoupled in the absence of torque in the shaft and being variably coupled as an incident of torque being developed in the shaft causing a corresponding change in the reluctance of the shaft; and

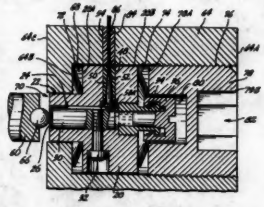
means for providing a signal corresponding to a voltage developed in the pickup winding coil as a result of a change in the magnetic reluctance of the shaft resulting from torque developed in the shaft.

4,563,906

LOAD MEASUREMENT APPARATUS INCLUDING MINIATURE INSTRUMENTED HYDROSTATIC CELL

Richard A. Mathias, Renton, Wash., assignor to Camtech, Inc., Renton, Wash.

Filed Nov. 23, 1983, Ser. No. 554,600
Int. Cl.[4] G01L *1/02*
U.S. Cl. 73—862.58 **29 Claims**



5. A miniature instrumented hydrostatic cell for use in measuring the load exerted on a structural member, said cell comprising:

a housing that consists of a first cylindrical portion and a second cylindrical portion projecting from and integral with said first cylindrical portion, wherein said first and second cylindrical portions have a common longitudinal axis, and wherein the diameter of said first cylindrical portion is greater than that of said second cylindrical portion;

a cavity defined in said housing;

a membrane for receiving at least a portion of the load to be measured, said membrane forming a first wall of said cavity, said membrane being integral with said second cylindrical portion and forming a portion of an end face thereof, the rigidity of said membrane being substantially less than that of said housing;

a temperature compensation insert disposed within said cavity;

sealing means mounted in said housing and extending to a second wall of said cavity, for introducing an incompressible fluid into said cavity and for permitting said cavity to be substantially evacuated of air so that all portions of said cavity not occupied by said insert are completely filled with the incompressible fluid; and,

pressure measurement means for providing measurements of the pressure within said cavity.

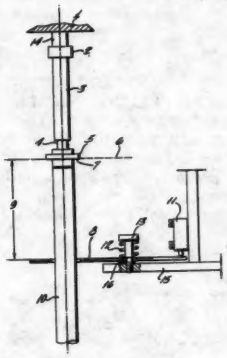
4,563,907

DIRECT READING AUTOMATIC PIPETTE

Edgar G. Johnson, Jr., Huntsville; James J. Cornelison, Gurley, and Paul V. Mackovjak, Huntsville, all of Ala., assignors to Micromedic Systems Inc., Horsham, Pa.

Filed Oct. 31, 1983, Ser. No. 546,796
Int. Cl.[4] G01N *1/14*
U.S. Cl. 73—864.16 **7 Claims**

1. In an automated apparatus for dispersing or diluting metered amounts of fluid having interchangeable syringe assemblies, the improvement comprising means on each of said assemblies for indicating the maximum delivery volume of



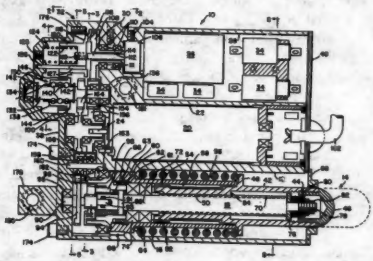
each of said assemblies and means on said apparatus for automatically sensing said indicating means by said apparatus.

4,563,908

HIGH SPEED, DUAL OPERATED ELECTROMECHANICAL ACTUATOR

Eugene E. Shube, Elmont, N.Y., assignor to Plessey Incorporated, New York, N.Y.

Filed Mar. 14, 1984, Ser. No. 589,572
Int. Cl.[4] G05G *17/00*
U.S. Cl. 74—2 **21 Claims**



1. A high speed stored energy operated electromechanical actuator comprising:

energy storage means;

an operating means for executing a power delivery mechanical motion and and an energy storing mechanical motion, coupling means coupling said energy storage means and said operating means such that when said operating means executes a power delivery mechanical motion said operating means is being driven by said energy storage means, and when executing an energy storage mechanical motion said operating means is driving said energy storage means and storing energy therein;

reversible gear transmission means having an output coupled to said operating means and having two independent inputs;

trigger means coupled to one input of said transmission means to trigger operation of said operating means whereupon said operating means is driven by said energy storage means to execute a power delivery mechanical motion, said trigger means being capable of resetting itself, and a reversible electric motor coupled to said other input which in one direction of rotation drives said operating

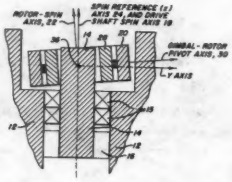
means through said transmission means to execute an energy storage mechanical motion to store energy in said energy storage means and which in its other direction of rotation drives said operating means through said transmission means to execute a power delivery mechanical motion.

4,563,909

SYSTEM FOR ELECTRONICALLY TUNING AND SUPPRESSING 2N RECTIFICATION TORQUES IN A DYNAMICALLY TUNED FREE ROTOR GYROSCOPE

Raymond Carroll, Andover, and Byong-Ho Ahn, Wayland, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Jul. 2, 1982, Ser. No. 394,720
Int. Cl.[4] G01C *19/28, 19/30*
U.S. Cl. 74—5.5 **5 Claims**



1. A system for suppressing 2N rectification torques in a free rotor gyroscope, said gyroscope including

a case,

a drive shaft and associated means for rotating and supporting said drive shaft with respect to said case at an angular rate w_z about a drive shaft spin axis,

a rotor adapted for rotation about a rotor spin axis, and

a gimbal coupling said rotor and drive shaft, said gimbal including first pivot means for elastically coupling said drive shaft to said gimbal about a gimbal-shaft pivot axis orthogonal to and intersecting said drive shaft spin axis, and including a second pivot means for elastically coupling said rotor to said gimbal about a gimbal-rotor pivot axis orthogonal to and intersecting said rotor spin axis and said gimbal shaft pivot axis, comprising:

means for adjusting said angular rate w_z whereby direct elastic restraint torques are nulled, and means for applying a nulling torque to said rotor proportional to the bending of said first and second pivot means about the respective ones of said pivot axes, whereby elastic restraint torques due to angular vibrations of said drive shaft with respect to said rotor are substantially cancelled.

4,563,910

POSITIVE-LOCKING INDEXING SYSTEM FOR HIGH-SPEED OPERATION

Hiroo Miyazaki; Teruo Shirai, both of Ueda, and Tsutomu Ogawa, Fuchu, all of Japan, assignors to Kabushiki Kaisha Miyano Tekkosho, Nagano, Japan

Filed Feb. 29, 1984, Ser. No. 584,596
Claims priority, application Japan, Mar. 16, 1983, 58-45114
Int. Cl.[4] B23Q *16/10*
U.S. Cl. 74—820 **6 Claims**

1. An indexing system for indexing a driven member to be indexed, with respect to rotation thereof about an axis thereof in a machine having a frame structure, said index system comprising:

a main shaft fixed coaxially to the driven member and rotatably supported in a manner permitting some translation thereof in the axial direction thereof;

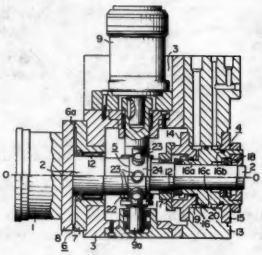
an indexing mechanism driven by a hydraulic motor and intercoupled to the main shaft to rotate the same intermittently through specific angular increments between indexing position;

a clutch coupling comprising a movable plate fixed coaxially to the driven member and a stationary plate fixed to the frame structure in a position to coaxially and parallelly confront the movable plate, the movable and stationary plates being adapted to become mutually engaged in positively licked state and to become disengaged when the movable plate is pressed against and separated from the stationary plate;

a hydraulic cylinder fixed relative to the frame structure and operating through a piston accomodated therein and connected to the main shaft to drive the same in said translation thereby to act through the driven member to move the movable plate against and away from the stationary plate; and

an operating system for controllably operating the hydraulic cylinder and the indexing mechanism,

said operating system being a hydraulic system having a



pump line, a tank line, and a changeover valve of two-position, four-connection type provided with a pump port connected to the pump line, a tank port connected to the tank line, a first actuator port, and a second actuator port, the area of the surface of the piston to receive pressure for actuating the clutch coupling in the engaging direction being greater than that of the opposite surface of the piston, the actuation chamber of the hydraulic cylinder on the side of the smaller piston surface area being connected to the pump line, the opposite actuation chamber on the side of the greater piston surface area being connected, when the changeover valve is in its one changeover position, to the pump port via the first actuator port and being connected, when the changeover valve is in its other changeover position, to the tank port via the first actuator port, the hydraulic motor being connected to the pump line and to the second actuator port, which is closed when the valve is in said one changeover position and is communicated with the tank line when the valve is in said other changeover position.

4,563,911

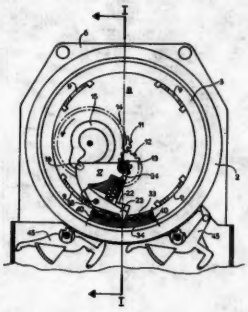
PROGRAMMER CONTROL DEVICE

Michel Chauvigne, Cluses, France, assignor to Societe Industrielle de Bellevaux Sibel, Cluses, France

Filed Jul. 6, 1984, Ser. No. 628,340
Int. Cl.[4] F16H *29/12*
U.S. Cl. 74—125 **3 Claims**

1. A programmer control device comprising a rotary cam block comprising a first part and a second part which are rotatable relative to one another, a rate reduction collar rotatable relative to said cam block and having an integral toothed ring having at least one orifice therein, said second part of said cam block having a toothed ring underlying said toothed ring of said rate reduction collar, said second part of said cam block further having a smooth ring having at least one orifice therein, and said first part of said cam block having a toothed ring having a first portion underlying said smooth ring of said

second part and a second portion not underlying said smooth ring, an oscillatable support having three pawls pivotally mounted thereon and means for oscillating said support at a predetermined rate, said pawls comprising a first pawl resiliently engaging teeth of said toothed ring of said rate reduction collar to advance said collar as said support oscillates and also extending through said orifice in said toothed ring of said rate reduction collar to engage teeth of said toothed ring of said second part of said cam block to advance said second part of



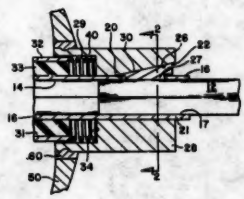
said cam block at a lower rate than said rate reducing collar, a second pawl resiliently engaging said smooth ring of said second part of said cam block and extending through said orifice in said smooth ring to engage teeth of said first portion of said toothed ring of said first part of said cam block to advance said first part at a lower rate than said second part of said cam block, and a third pawl selectively engageable with said second portion of said toothed ring of said first part of said cam block to advance said first part rapidly.

4,563,912

TELESCOPING POLYGONAL STEERING COLUMN

Kevin B. Parks, Mishawaka, Ind., assignor to Allied Corporation, Morristown, N.J.

Filed Dec. 19, 1983, Ser. No. 562,658
Int. Cl.[4] B62D *1/18*
U.S. Cl. 74—493 **12 Claims**



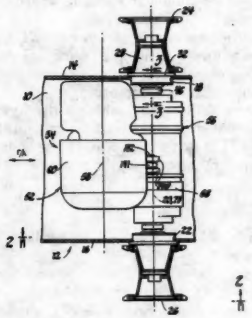
1. An axially movable steering column comprising inner and outer shafts one of which is axially movable with respect to the other of said shafts, said inner shaft having a polygonal shape and said outer shaft having a corresponding polygonal bore therein for receiving said inner shaft, and means operatively connected to said inner and outer shafts for causing rotation and continuous frictional engagement of one of said shafts with respect to the other of said shafts and eliminating torsional lash therebetween, said means comprising a plurality of slots located in said outer shaft and circumferentially offset relative to one another, a plurality of inclined wedges each being located in a respective slot for abutting a polygonal surface of said inner shaft, a collar member telescoped over said inner and outer shafts and having a plurality of inclined ramps located at the interior thereof, each inclined ramp in alignment and contact with a respective inclined wedge for loading and causing inward movement of the inclined wedge against said inner shaft upon axial movement of said collar member relative to said outer shaft, means for preventing rotation of said collar member relative to said outer shaft but permitting axial movement of the collar member relative to the outer shaft, and means telescoped over said inner and outer shafts for biasing said collar member against said inclined wedges, the engagement of the inclined ramps with the inclined wedges causing a plurality of surfaces of said inner shaft to engage a plurality of adjacent surfaces of said outer shaft in surface-to-surface contact to eliminate torsional lash therebetween and causing the axial center line of said inner shaft to be offset from the axial center line of said outer shaft.

4,563,913

SIDE-BY-SIDE ENGINE AND TRANSMISSION ASSEMBLY

James F. Hartz, Indianapolis, and Harry E. Latshaw, Danville, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 29, 1984, Ser. No. 626,441
Int. Cl.[4] F16H *57/02*
U.S. Cl. 74—606 R **4 Claims**



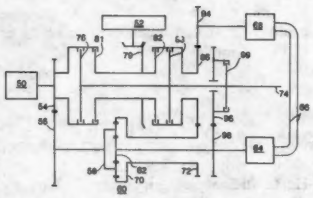
1. In an engine and transmission assembly including an engine having a block defining a primary rotating group axis and a transmission having a housing defining a drive output axis and a power input axis parallel thereto and laterally spaced therefrom, the combination comprising, transfer case means rigidly attached to said engine block generally amidships thereof defining an engine power output axis parallel to said primary rotating group axis and laterally spaced therefrom, means on one of said transfer case means and said transmission housing defining a pair of spaced trunnions aligned on the corresponding one of said engine power output and said transmission power input axes, means on the other of said transfer case means and said transmission housing defining a pair of axially spaced saddles aligned on the corresponding one of said engine power output and said transmission power input axes, respective ones of said trunnions being rotatably received in corresponding ones of said saddles so that said engine power output and said transmission power input axes coincide and said transmission housing is attached to said engine block for relative rotation about said coincident axes, intermediate drive means including a rotating shaft member aligned on said coincident axes operative to transfer power from said transfer case means to said transmission, and torque reaction control means between said engine block and said transmission housing remote from said coincident axes operative to prevent relative rotation between said engine block and said transmission housing.

4,563,914

CONTINUOUSLY VARIABLE TRANSMISSION WITH AUXILIARY DRIVE

Moshe Miller, Jerusalem, Israel, assignor to Industries Development Corporation (International Services), Tel-Aviv, Israel

Filed Jan. 10, 1983, Ser. No. 456,551
Claims priority, application Israel, Jan. 10, 1982, 64739
Int. Cl.[4] F16H *47/04*
U.S. Cl. 74—687 **4 Claims**



2. Drive apparatus for a vehicle having drive wheels, a rotational energy source and a flywheel, said apparatus comprising:

first and second continuously variable transmission components;

power transfer means communicating between the first and second continuously variable transmission components;

differential means including a sun, a carrier and a ring;

selectable coupling means comprising:

first and second shaft means, wherein the flywheel is coupled to said first shaft means and the second shaft means is connected to the drive wheels of the vehicle;

primary means, operative in a primary mode of operation to couple:

1. the rotational energy source and said shaft means to the carrier;
2. the ring to the second continuously variable transmission component; and
3. the sun to the first continuously variable transmission component and to the second shaft means

first means, operative in a first mode of operation to couple:

1. the rotational energy source and the first shaft means to the carrier;
2. the sun to the first continuously variable transmission component; and
3. the ring to the second continously variable transmission component and to the second shaft means;

second means operative in a second mode of operation to connect:

1. the first shaft means to the ring;
2. the ring to the second continously variable transmission component;
3. the first continuously variable transmission component to the sun; and
4. the rotational energy source to the carrier and to the second shaft means.

4,563,915

WOBBLE TYPE AXIAL SPEED REDUCER APPARATUS

Edward C. Tibbals, Jr., High Point, N.C., assignor to William R. Loeffler, Denver, Colo.

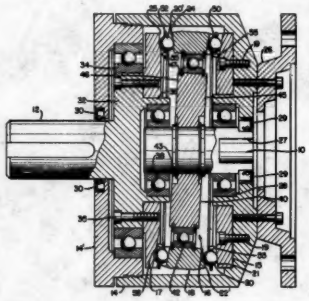
Filed Jul. 1, 1983, Ser. No. 509,999
Int. Cl.[4] F16H *13/08*
U.S. Cl. 74—800 **23 Claims**

1. A speed reducer assembly comprising:

a rotatable input shaft having drive means therefor;

a first gear member journaled for independent rotation with respect to said input shaft and mounted in canted relation thereto whereby to circumscribe a sinusoidal path of movement, said first gear member being driven by said input shaft, said first gear member including axially directed gear portions on one face thereof having uniformly spaced, axially directed crests and valleys;

a second gear member mounted in axially spaced relation to said first gear member and provided with gear portions having uniformly spaced, axially directed crests and valleys differing in number from and disposed in spaced relation to the crests and valleys of said first gear portions; and



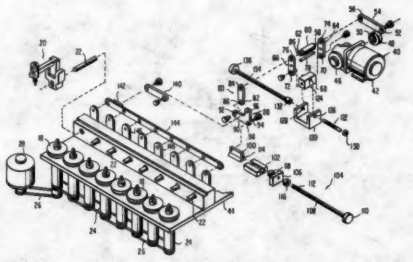
a plurality of rolling members interposed between the crests and valleys of said first and second gear portions for transmitting torque from said first gear portion to said second gear portion, the speed reduction ratio being a function of the relative pitch as defined by the relative number of crests and valleys between said first and second gear portions.

4,563,916

DYNAMICALLY VARIABLE OSCILLATING ADJUSTMENT ASSEMBLY

Joseph Tusinski, Muskogee, Okla., assignor to Coburn Optical Industries, Inc., Muskogee, Okla.

Filed Sep. 7, 1983, Ser. No. 530,086
Int. Cl.[4] F16H *35/08*
U.S. Cl. 74—829 **16 Claims**



1. A dynamically variable oscillating stroke and position adjustment assembly comprising:

a frame;

a first link means;

first means connected to said frame for pivotably connecting one end of said first link means to said frame;

a second link means pivotably connected at one end to the other end of said first link means;

a bell crank having a first arm and a second arm and an intermediate pivot;

second means connected to said frame for pivotably connecting said bell crank intermediate pivot to said frame, including

means for adjusting the position of said bell crank intermediate pivot with respect to said frame and said one end of said first link means; and

means for pivotably connecting said first arm of said bell crank to the other end of said second link means, wherein oscillation of said other end of said first link means will operaly oscillate said second arm of said bell crank and adjustment of the position of said bell crank intermediate pivot with respect to said one end of said first link means will operably vary the position of the oscillation of said second arm of said bell crank and the stroke of the oscillation thereof;

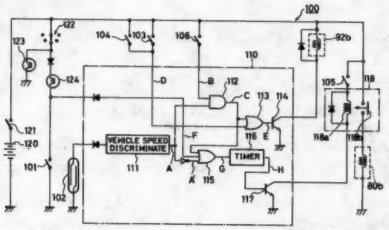
said first means connected to said frame for pivotably connecting said one end of said first link means to said frame includes means for translating said first link means with respect to said frame such that the pivot point of said first link means may be selectively adjusted with respect to said frame and said intermediate pivot of said bell crank to vary the stroke of the oscillation of said second arm of said bell crank.

4,563,917

TWO STAGE KICKDOWN CONTROL SYSTEM FOR A MOTOR VEHICLE AUTOMATIC TRANSMISSION

Haruki Higashi; Kouichirou Waki; Masaru Fukuiri, and Kazuo Yukitomo, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 28, 1984, Ser. No. 655,723
Claims priority, application Japan, Sep. 30, 1983, 58-183779
Int. Cl.[4] B60K *41/06*
U.S. Cl. 74—866 **11 Claims**



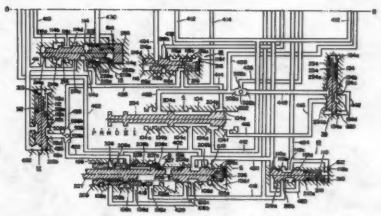
1. A vehicle automatic transmission including a hydraulic torque converter, a transmission gear mechanism connected with the torque converter and having at least three gear stages of different gear ratios for forward drive, friction means for selecting one of said gear stages, kickdown control means comprising first shift down circuit means for controlling said friction means so that the transmission gear mechanism is shifted down from a high gear stage to a lower gear stage, kick down solenoid means provided in said first shift down circuit means for controlling said first shift down circuit means and kick down switch means adapted to be actuated by an engine control member when the engine control member is moved substantially to a full power position to thereby control said kick down solenoid means to effect a shift down from a high gear stage to a lower gear stage, shift down control means comprising second shift down circuit means for controlling said friction means so that the transmission gear mechanism is shifted down from a high gear stage to a next adjacent lower gear stage, shift down solenoid means provided in said second shift down circuit means for controlling said second shift down circuit means and shift down switch means adapted to be actuated by the engine control member when the engine control member is moved to a position spaced a predetermined distance from said full power position so that said shift down switch means is actuated earlier than said kick down switch means when the engine control member is moved toward said full power position to thereby control said shift down solenoid means to effect a shift down from a high gear stage to the next adjacent lower gear stage, time delay means responsive to an actuation of said shift down switch means for delaying operation of said kick down solenoid means for a predetermined time when the kick down switch means is actuated after the actuation of said shift down switch means.

4,563,918

LINE PRESSURE CONTROL OF HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

Kazuhiko Sugano, Zama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 29, 1983, Ser. No. 518,413
Int. Cl.[4] B60K *41/16*
U.S. Cl. 74—869 **7 Claims**



1. A hydraulic control system for an automatic transmission including an input shaft operatively connected via a torque converter to an engine which has a throttle which opens in degrees, an output shaft, and fluid operated friction units which are selectively made operative and inoperative for producing a plurality of speed ratios between the input and output shafts, comprising:

means for generating a throttle related fluid pressure which is variable in a pattern corresponding approximately to the pattern of output torque of the engine;

means for generating a governor fluid pressure variable with the rotational speed of the output shaft;

a cut back valve communicating with said throttle related fluid pressure generating means and with said governor fluid pressure generating means for generating a cut back fluid pressure which increases with an increase in said throttle related fluid pressure and decreases with an increase in said governor fluid pressure;

a pressure regulator valve communicating with said throttle related fluid pressure generating means and said cut back fluid pressure generating means for generating a line fluid pressure which is variable with said throttle related fluid pressure and said cut back fluid pressure;

means for supplying said line fluid pressure from said pressure regulator valve to the fluid operated friction units,

said cut back valve comprising a pressure regulating means movable in a first direction in response to said throttle related fluid pressure and movable in a second direction opposite to said first direction in response to said governor fluid pressure and said cut back fluid pressure, said cut back valve generating said cut back fluid pressure when said pressure regulating means assumes an equilibrium state thereof wherein the force due to the throttle related fluid pressure acting on said pressure regulating means balances with a sum of the force due to said governor fluid pressure acting on said pressure regulating means and the force due to said cut back fluid pressure acting on said pressure regulating means, wherein said pressure regulating means comprises a first valve spool formed with a first pressure acting area which is exposed to said throttle related fluid pressure, and a second spool having a second pressure acting area which is exposed to said governor fluid pressure and a third pressure acting area which is exposed to said cut back fluid pressure, said first spool

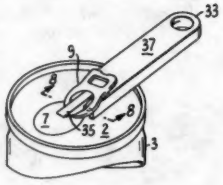
being biased in said first direction to abut said second spool which is biased in said second direction to abut said first spool.

4,563,919

CAN OPENER FOR FLIP TOP CANS

William H. Sellars, 1618 Manzanita Dr., Belmont, Calif. 94002

Filed Nov. 5, 1984, Ser. No. 668,558
Int. Cl.[4] B67B *7/40*
U.S. Cl. 81—3.55 **11 Claims**



1. A tool for opening flip-top cans of the type having a combination ring and displaceable disc structure which comprises:

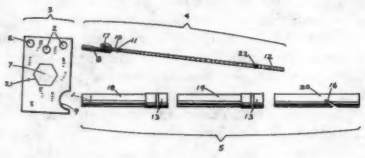
an elongated handle, with one end thereof having two opposed, downwardly projecting rails, said rails extending from said one end along the length of said handle to a point intermediate the length thereof, said tool further including a blade projecting outwardly from said one end substantially along the axis of said elongated handle, with the lower surface of said blade being above the plane defined by the lower surface of the downwardly projecting rails, whereby in use, said blade is inserted through the ring of said flip-top structure with said rails functioning to guide said blade to and over said displaceable disc whereupon said tool is rotated upwardly in a manner to lift said ring and push said displaceable disc downwardly into said can.

4,563,920

HIGH TORQUE OUTPUT, COLLAPSIBLE AND LIGHT WEIGHT WRENCH

Thomas S. Ingersoll, 130 Fountain Ave., Pacific Grove, Calif. 93950

Filed May 1, 1984, Ser. No. 605,886
Int. Cl.[4] B25B *13/00*
U.S. Cl. 81—177.8 **3 Claims**



1. A high torque output, collapsible and light weight wrench comprising:

a head portion having work engaging surfaces, first handle attaching means consisting of two or more bores located a suitable distance above said work engaging surfaces and second handle attaching means consisting of a recess located a suitable distance below said work engaging surfaces;

a first handle member being flexible and elongated and having a first end portion including first end portion attaching means consisting of a hook and a further end portion including further end portion attachment means consisting of a fixed loop;

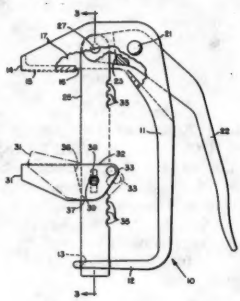
a second handle member composed of two or more removably attached units, being rigid and elongated and having a first end portion including first end portion attaching means consisting of a mortise and a further end portion including further end portion attaching means consisting of a slot.

4,563,921

COMPACT PLIERS WITH LARGE, ADJUSTABLE JAW SPAN

John Wallace, 287 Elliot St., #12, Newton, Mass. 02164

Filed Mar. 5, 1985, Ser. No. 708,498
Int. Cl.[4] B25B *7/12*
U.S. Cl. 81—373 **16 Claims**



1. Adjustable pliers, comprising

a first member having thereon an elongate hand-grip portion,

an elongate second member,

means supporting said second member adjacent opposite ends thereof on said first member for reciprocation generally parallel to the hand-grip portion of said first member,

a first jaw secured to and projecting transversely from said first member adjacent one end thereof,

a second jaw projecting from said second member and having on one end thereof a plane operating surface disposed in spaced, confronting relation to a corresponding operation surface on said first jaw,

said supporting means comprising a handle connected at one end to said second member,

means pivotally connecting said handle intermediate its ends to said first member for swinging movement relative thereto in opposite directions, thereby to reciprocate said second member and to shift said second jaw toward and away from said first jaw, and

means mounting said second jaw on said second member for longitudinal adjustment thereon into any one of a plurality of different operating positions.

4,563,922

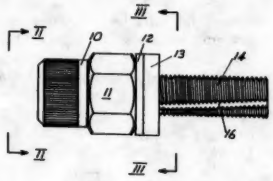
TORQUE TRANSMITTING DEVICE

Daryl Wheeler, 4 Hope Rd., Ardross, Australia (6153)

Continuation of Ser. No. 387,878, as PCT AU81/00142, Oct. 2, 1981, published as WO82/01150, Apr. 15, 1982, § 102(e) date Jun. 4, 1982, Pat. No. 4,446,765. This application Feb. 21, 1984, Ser. No. 582,187
Claims priority, application Australia, Oct. 6, 1980, PE5886; Nov. 3, 1980, PE6333
Int. Cl.[4] B25B *23/08*
U.S. Cl. 81—441 **19 Claims**

1. A torque transmitting device comprising a shaft having a longitudinal axis, a first end on said shaft arranged to be inserted foremost into a bore in a workpiece, a second end on said shaft, at least one groove extending longitudinally of the shaft, a workpiece engaging jaw slidingly mounted in each

groove for sliding movement along the length of the groove, and means for retaining each jaw in its respective groove, each groove being non-aligned longitudinally parallel to the longitudinal axis of the shaft but being angled across the face of the shaft towards said first end thereof in the direction of rotation of the shaft during removal of a workpiece.

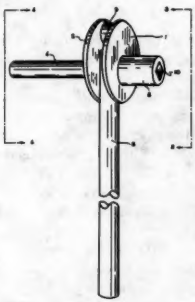


4,563,923

IMPACT TOOL

Douglas A. McDonald, Thornleigh, Australia, assignor to Rotopack Tools Pty. Limited, Sydney, Australia

Continuation-in-part of Ser. No. 370,247, Apr. 20, 1982, abandoned. This application Aug. 15, 1983, Ser. No. 523,360
Claims priority, application Australia, Mar. 30, 1983, PF8698
Int. Cl.[4] B25B *19/00*
U.S. Cl. 81—466 11 Claims



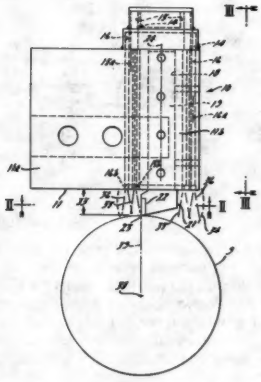
1. An impact tool for applying impact torque comprising:
a shaft defining an axis,
a transversely extending striker bar mounted for rotation about said axis,
at least one anvil member connected to said shaft and spaced from said axis in the path of said striker bar,
said at least one anvil member extending between a pair of spaced, parallel circular discs extending normally with respect to said axis,
said shaft intersecting said discs and defining a center of rotation for said impact tool at the intersection,
said circular discs having centers displaced from the intersection of said shaft therewith,
said at least one anvil member eccentrically located with respect to said centers of said circular discs thereby providing an eccentric structure to said tool.

4,563,924

METHOD AND APPARATUS FOR INCREASING WEAR LIFE OF CERAMIC TOOLS

Franklin D. Runkle, Novi, and Gerald J. Tennenhouse, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US83/02028, § 371 Date Dec. 22, 1983, § 102(e) Date Dec. 22, 1983, PCT Pub. No. WO85/02798, PCT Pub. Date Jul. 4, 1985
PCT Filed Dec. 22, 1983, Ser. No. 584,433
Int. Cl.[4] B23B *1/00;* B23Q *11/00*
U.S. Cl. 82—1 C 7 Claims



7. A method of reducing the oxygen concentration in a zone about the interface between a nonoxide ceramic cutting tool and a relatively rotating metal workpiece, comprising:
(a) directing first streams of inert gas to substantially and closely surround the point of contact of said tool with said workpiece; and
(b) directing second streams of inert gas to at least partially surround said first stream, said first streams of inert gas forming a first annular curtain surrounding said interface and said second streams of inert gas forming a second annular curtain at least partially surrounding said first curtain of inert gas, the rates of flow of inert gas in said first curtain exceeding the rates of flow of inert gas in said second curtain by at least 1 ft^3/min, said curtains of inert gas being directed in a manner to displace the ambient atmosphere in said zone to a level in which the oxygen concentration therein is equal to or less than 1% of the gas in the zone.

4,563,925

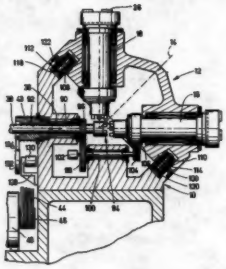
MULTISPINDLE-AUTOMATIC TURRET LATHE

Helmut F. Link, Aichwald, Fed. Rep. of Germany, assignor to Index-Werke Konn.-Ges. Hahn & Tessky, Esslingen, Fed. Rep. of Germany

Filed Apr. 26, 1983, Ser. No. 488,746
Claims priority, application Fed. Rep. of Germany, May 6, 1982, 3216891
Int. Cl.[4] B23B *19/02, 13/02*
U.S. Cl. 82—28 R 6 Claims

1. A multispindle automatic turret lathe including in combination, a headstock, a spindle support, means mounting said spindle support on said headstock for rotation about a central indexing axis, a plurality of workspindles, means mounting said workspindles on said support for rotation around respective axes which intersect said indexing axis at a common point of intersection, said workspindles being movable into a working position by rotation of the spindle support, a drive shaft having an axis of rotation, means mounting said drive shaft in said

headstock for rotation about said drive shaft axis, a main driving motor to rotate said drive shaft, control means to control said motor including angular position control means to adjust said drive shaft to a predetermined position of angular rotation, first coupling means on the drive shaft and workspindles to couple the shaft with a workspindle which is in said working position, said first coupling means being shiftable along said drive shaft axis on a path including said common point of



intersection between an engaged position in which the drive shaft is coupled with a work spindle which is in said working position and a disengaged position, means for shifting said first coupling means, second coupling means between said drive shaft and said spindle support to rotate said spindle support about said indexing axis, said first and second coupling means being rigidly interconnected so that said second coupling means is in driving engagement when said first coupling means is in said disengaged position.

4,563,926

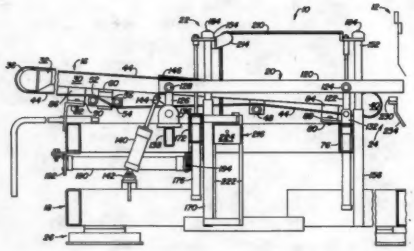
CONVEYOR SYSTEM FOR SHEAR DISCHARGE

Peter W. Boardman, St. Catharines, Canada, assignor to Deere & Company, Moline, Ill.

Filed Nov. 28, 1983, Ser. No. 555,780

Int. Cl.[4] B21D *43/00*; B23D *15/09*

U.S. Cl. 83—107 **48 Claims**



1. A metal shear discharge conveying assembly for conveying sheared material, comprising:

a plurality of self-contained, elongated conveying modules, each module comprising an elongated module frame, a pair of opposed end support pulleys rotatably supported at opposite ends of the module frame for rotation about axes transverse to the axis of the frame, said module frame including an upwardly directed support surface extending between the pulleys, a drive shaft extending axially from one of the pulleys, and a belt trained around the pulleys and over the upwardly directed support surface;

a main conveyor frame supported adjacent the shear;

module support bracket means for releasably supporting the individual modules in spaced side-by-side relationship on the main conveyor frame with the drive shafts generally aligned and the portion of the belts above the support surfaces defining a sheared material transport area which extends below the shear;

means coupling the drive shafts together in driving relation when the modules are supported on the main frame by the bracket means while selectively permitting individual modules to be uncoupled, said support bracket means when released permitting the entire corresponding conveying module to be lifted from the main frame independently of any modules which remain supported on the main frame; and

drive means drivingly coupled to the shafts to rotate the pulleys and thereby drive the belts.

4,563,927

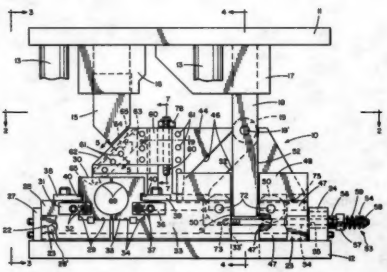
TUBE CUT-OFF APPARATUS

Robert J. Kinsley, Elmhurst, Ill., assignor to Vogel Tool & Die, Stone Park, Ill.

Continuation of Ser. No. 427,715, Sep. 29, 1982, abandoned. This application Sep. 7, 1984, Ser. No. 648,612

Int. Cl.[4] B23D *21/00, 25/04*

U.S. Cl. 83—319 **33 Claims**



1. A tube cut-off apparatus comprising an upper plate and a lower plate positioned in vertical alignment and for relative vertical reciprocation,

a tube cut-off blade on said upper plate,

a first cam means on said upper plate projecting downwardly toward said lower plate,

a guide member on said lower plate extending longitudinally thereof,

first and second longitudinally spaced die block supports carried on said guide member for relative longitudinal movement,

said die block supports having adjacent ends in relatively spaced relation,

a pair of cut-off jaws forming a gripping opening, supported on said adjacent ends, and being adapted to clamp and support a tube to be cut during movement of said jaws in closing relation,

said jaws having a recess for receiving said cut-off blade to cut a tube supported within said jaws,

a jaw operating cam structure operatively connected to one of the die block supports and engaged by said first cam means for moving relatively said die block supports together and clamping said cut-off jaws together responsive to downward motion of said first cam means,

a slide member supported for reciprocal horizontal movement on said lower plate relative to said lower plate,

said slide member having a first slide operating cam means,

a cutting blade on said slide member adapted to move horizontally in said recess with said slide member relative to said lower plate,

a second slide operating cam means operatively associated with said first cam means and operative thereby and engaging said first slide operating cam means to move said

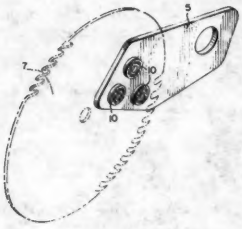
slide member thereby cutting an opening in a tube to be cut supported in said jaws prior to movement of said cut-off blade through said recess and said jaws.

4,563,928

BLADE GUIDE FOR SAW BLADES

Krister Salomonsson, Lästad Säteri, S-342 00 Alvesta, Sweden

Continuation-in-part of Ser. No. 366,448, Apr. 7, 1982, Pat. No. 4,466,323. This application Jun. 26, 1984, Ser. No. 634,643
Claims priority, application Sweden, Apr. 22, 1981, 8102557
The portion of the term of this patent subsequent to Aug. 2, 2001, has been disclaimed.
Int. Cl.[4] B27B *11/02*
U.S. Cl. 83—821 **6 Claims**



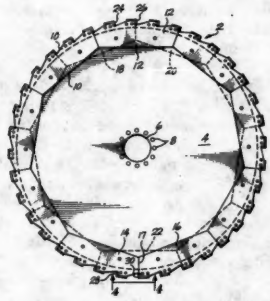
1. A blade guide for saw blades comprising
a base plate,
a plurality of carbide plates attached to said base plate at spaced intervals,
a supporting matrix of material softer than said carbide plates embedding said carbide plates therein with the side of said carbide plates facing the saw blades being free of said material of said supporting matrix,
a surface facing the saw blades including said carbide plates and said material of said supporting matrix being substantially smooth with said carbide plates at the same level as said material of said supporting matrix.

4,563,929

FIELD REPAIRABLE CIRCULAR SAW

David R. Ringlee, Gig Harbor, and Paul G. Gaddis, Bellevue, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Aug. 30, 1984, Ser. No. 646,277
Int. Cl.[4] B27B *33/02*
U.S. Cl. 83—840 **13 Claims**



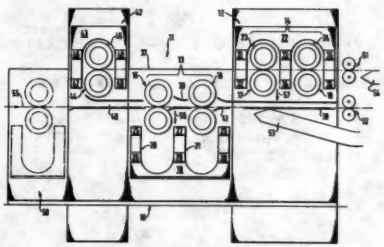
1. A circular saw which comprises:
a. a flat metallic saw plate of circular configuration;
b. a plurality of flat segment members attached to each face of the saw plate around the entire periphery thereof, each segment member having a plurality of generally buttress-shaped tooth retaining portions located on the outer periphery thereof and extending beyond the periphery of the saw plate, said segment members being in an abutting end-to-end relationship, the segment members on opposite sides of the plate being in a staggered configuration so that the abutting end portions of the members on one side are generally located opposite the central portions of the segment members on the opposite side in a manner in which the tooth retaining portions on each side remain in aligned opposing relationship;
c. segment member attachment means to attach the segment members to the saw plate;
d. tooth means adapted to fit between the opposed buttress-shaped tooth retaining portions of the segment members; and
e. tooth retaining means to lock the sawteeth between the segment members.

4,563,930

MACHINE FOR LONGITUDINALLY CUTTING AND GROOVING A LENGTH OF MATERIAL, ESPECIALLY CORRUGATED BOARD

Manfred Schommler, Quickborn-Heide, and Arthur Dirks, Hamburg, both of Fed. Rep. of Germany, assignors to Werner H. K. Peters Maschinenfabrik GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 438,606, Nov. 2, 1982, abandoned. This application Aug. 22, 1984, Ser. No. 643,671
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1981, 8132018[U]
Int. Cl.[4] B26D *1/24, 5/02*
U.S. Cl. 83—862 **9 Claims**



1. A machine for longitudinally cutting and grooving a length of material continuously oncoming without interruption, especially corrugated board, comprising a longitudinal cutting and grooving device having at least two longitudinal cutting and grooving units arranged at different levels and capable of height adjustment provided with separate cutting and grooving tools, to which the front edge of a length of material is capable of being selectively supplied, characterized in that the longitudinal cutting and grooving units (13, 14) are disposed one after the other in the working direction, with a track guide above the lower and beneath the upper longitudinal cutting and grooving unit respectively connected to the associated said unit in such a manner that the track guide of one unit is respectively constantly aligned with the processing plane of the other unit and the longitudinal cutting and grooving units (13, 14) are coupled for synchronous height adjustment to apply said lower unit to the material by simultaneously moving the lower and upper units to an upper height position and to apply the upper unit to the material by simultaneously moving the lower and upper units to a lower height position.

4,563,931

SYSTEM FOR SCANNING MECHANICAL VIBRATIONS

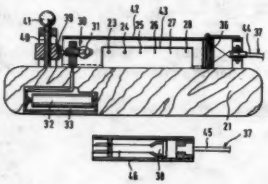
Günter Siebeneiker, Wetter; Hartmut Brunn, Sprockhövel, and Uwe Steiger, Witten, all of Fed. Rep. of Germany, assignors to Kromberg & Schubert, Wuppertal, Fed. Rep. of Germany

Filed Nov. 23, 1983, Ser. No. 554,833

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1982, 3243563

Int. Cl.[4] G10H *3/18*

U.S. Cl. 84—1.16 17 Claims



1. A system for scanning mechanical vibrations of an object comprising a source of radiation arranged for transmitting a radiation beam against one side of said object, the cross-section of said radiation beam exceeding the cross-section of said object; radiation collecting means including a lens having a radiation receiving surface arranged in the path of propagation of said beam at the opposite side of said object so as to receive a portion of said beam delimited by a shadow cast by said object; said receiving surface having a peripheral contour which converges in the direction of propagation of said shadow so that the irradiated portion of said receiving surface bounded by said contour and the moving shadow changes in size proportionally to the amplitude of vibrations; and said radiation collecting means further including means for converting the changes of said irradiated portion into corresponding electrical signals.

4,563,932

WAVEFORM DATA READ SIGNAL GENERATING APPARATUS

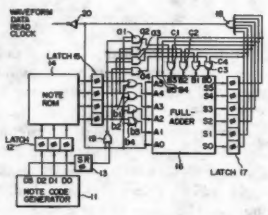
Takuya Sunada, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1984, Ser. No. 593,636

Claims priority, application Japan, Apr. 4, 1983, 58-57980; Apr. 4, 1983, 58-57981

Int. Cl.[4] G10H *1/06, 7/00*

U.S. Cl. 84—1.22 26 Claims



1. A waveform data read signal generating apparatus, comprising:

note code signal generating means for generating a plurality of note code signals in accordance with a musical performance, said note code signals representing respective notes, the frequencies of the notes designated by at least two of said note code signals being set at an integer ratio, said note code signals each including a common bit signal comprised of a plurality of bits and also including other different bit signals;

basic data generating means for generating basic data according to the common bit signals of said note code signals supplied from said note code signal generating means;

multiplying means coupled to said note code signal generating means and to said basic data generating means for multiplying the basic data by an integer, as determined by the other bit signals of said note code signals, to provide an integer multiple data; and

calculating means for generating a waveform data read signal in accordance with the integer multiple data provided by the multiplying means, said waveform data read signal having a frequency corresponding to the note code signals.

4,563,933

DYNAMICALLY ILLUMINATED GUITAR

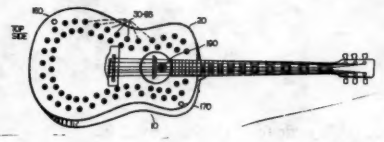
Chung C. Kim, 331 S. Harvard Blvd., Los Angeles, Calif. 90020

PCT No. PCT/US82/00883, § 371 Date Jan. 26, 1984, § 102(e) Date Jan. 26, 1984

PCT Filed Jun. 30, 1982, Ser. No. 575,432

Int. Cl.[4] G09B *15/02;* G10D *1/08*

U.S. Cl. 84—267 9 Claims



1. A dynamically illuminated guitar, comprising:

(a) a guitar;

(b) a plurality of lamps, embedded into or mounted on the face of said guitar;

(c) an internal microphone, mounted in the interior or on the face of said guitar;

(d) a plurality of light-dependent resistors, embedded into or mounted on the face of said guitar;

(e) a pulse-forming circuit that produces a train of digital pulses in various formats consisting of:

(1) a first format consisting of a series of pulses whose time spacing is proportional to and varied by the electric signals produced by the pitch of the musical and vocal sounds into the internal microphone,

(2) a second format consisting of a series of pulses whose time spacing is proportional to and varied by electrical signals produced by the amount of light energy received by the light-dependent resistors,

(3) a third format consisting of pulses produced when the sound volume into the interior microphone exceeds an upper threshold, the pulse rate being equivalent to the frequency of the sound signals,

(4) a fourth format consisting of a time period of a few seconds when no pulses appear, followed by a brief burst of very high frequency pulses, further followed by a train of pulses similar to the first format, and

(5) a fifth format consisting of a time period of a few seconds when no pulses appear, followed by a very brief burst of very high frequency pulses, further followed by a train of pulses similar to the second format;

(f) a first two-terminal mercury tilt switch, equivalent to an electrical single-pole, single-throw switch having open and closed positions that are determined by the physical orientation of the switch, for switching between formats of said pulse-forming circuit, the closed position allowing either of the first two formats, and the open position allowing any of the latter three formats;

(g) a second two-terminal mercury tilt switch of similar construction as said first mercury tilt switch for switching between the third, fourth and fifth formats, the closed

position allowing the third format and the open position allowing either the fourth or fifth formats;

(h) a single-pole, double position electromechanical switch for switching between pulse formats of said pulse-forming circuit, the first position allowing the first pulse format to appear if the first mercury tilt switch is in the closed position and the second mercury tilt switch is in the open position, or the first position allowing the fourth pulse format to appear if both said first and second mercury tilt switches are in the open position, the second position allowing the second pulse format to appear if said first mercury tilt switch is in the closed position and said second mercury tilt switch is in the open position, or the second position allowing the fifth pulse format to appear if both said first and second mercury tilt switches are in the open position;

(i) a sequential lighting circuit capable of accepting pulses at a forward input port and lighting each of the plurality of said lamps in a fixed sequential order, each pulse causing only one lamp to be lit at a time, said sequential lighting circuit also being capable of accepting pulses at a reverse input port and lighting each of the plurality of said lamps in a fixed sequential order that is the reverse of the sequence produced by pulses at the forward input port;

(j) a three-terminal mercury tilt switch equivalent to a single-pole, double position switch whose two positions are determined by the physical orientation of the switch, the first position of the switch allowing pulses from said pulse-forming circuit to be sent to the forward input port of said sequential lighting circuit, the second position of the switch allowing pulses from said pulse-forming circuit to be sent to the reverse input port of said sequential lighting circuit;

(k) an electric battery for supplying electrical power to said pulse-forming circuit and said sequential lighting circuit;

(l) a single-pole, single-throw electromechanical switch having an open and closed position, the closed position allowing electrical power to be supplied to said pulse-forming circuit and said sequential lighting circuit, the open position preventing the power from being supplied to the circuits; and

(m) an electronics and battery compartment mounted in the guitar, for housing said pulse-forming circuit, said sequential lighting circuit, said first and second two-terminal mercury tilt switches, said three-terminal mercury tilt switch, said single-pole, double position electromechanical switch, said single-pole, single-throw electromechanical switch, and said electric battery.

4,563,934

CAPO-TREMOLO-SLIDE ATTACHMENT FOR GUITARS

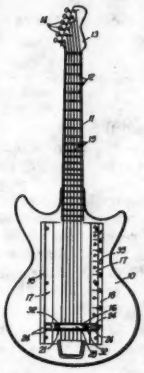
Jon Keizer, 271 B Pleasantview Ave., Piscataway, N.J. 08854

Filed Oct. 10, 1984, Ser. No. 659,427

Int. Cl.[4] G10D *3/04*

U.S. Cl. 84—313 **6 Claims**

5. A capo-tremolo-slide device for guitars comprising spaced parallel guide tracks mountable upon the top of a guitar sounding body to extend for the major portion of the length of said sounding body, an arched carriage bridging the strings of a guitar on which the device is installed and having a central elongated opening formed therethrough adjacent to and above the guitar strings, spaced arms carrying wheels on the opposite ends of said arched carriage and said wheels being engaged guidingly with said tracks, a slide bar floatingly held on the arched carriage within said opening and having a bottom surface element adapted to engage all of the guitar strings across their longitudinal axes, and variable tension resilient supporting and guidance means for the slide bar within said opening and being connected between the arched carriage and opposite end portions of the slide bar, whereby the slide bar



can be depressed toward the guitar strings by a musician, the slide bar being resiliently biased away from said strings.

4,563,935

MACHINE FOR THE DOUBLE TREATMENT OF WORKPIECES WHILE THEY ARE CONTINUALLY MOVING AND RECYCLED UPON A OPERATING DRUM, PARTICULARLY THE SUCCESSIVE VARNISHING OF BODIES OF REVOLUTION

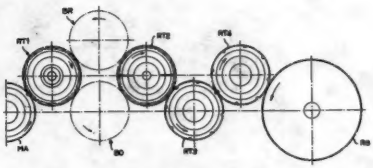
Jean C. Rinck; Alain M. Lecomte, both of Mulhouse, and Alain Scherrer, Pfastatt, all of France, assignors to Manufacture de Machines du Haut Rhin, "Manurhin" , Mulhouse, France

Filed Oct. 25, 1983, Ser. No. 545,066

Claims priority, application France, Oct. 25, 1982, 82 17794

Int. Cl.[4] F42B *33/14*

U.S. Cl. 86—17 **11 Claims**



1. In apparatus for the treatment of cartridge-cases moving continuously through a train of manipulating and cartridge-case-treating instrumentalities, said train having an operative drum adapted to carry out a treatment, transfer means downstream of the operating drum to lead the cartridge-cases to and from the operating drum, respectively, and to replace them respectively, and recycling drum disposed between the transfer means downstream and upstream of the operating drum, the operating drum and the transfer means being of such construction as to permit cartridge-cases to pass a plurality of times through the operating drum, as well as means for feeding cartridge-cases to the upstream transfer element and the means for returning the cartridge-cases after their discharge by the downstream transfer element, the improvement wherein:

the operating drum is provided with a first and a second level of circulation of cartridge-cases where there are carried out two treating operations which are at least partially different, the working positions in the two superimposed levels of the working drum being displaced a distance which is a fraction of the normal distance be-

tween successive cartridge-cases as they travel through the train,

the upstream transfer means and the downstream transfer means each has a first and a second wheel, the wheels being superposed, the wheels being displaced by the same said fraction of the normal spacing between the cartridge-cases,

the first wheels of the upstream transfer means and the downstream transfer means each cooperating with the first level of the operating drum, while the second wheels of the upstream and the downstream transfer wheels cooperate with the second level of the operating drum,

the means for feeding the cartridge-cases to the continuous chain cooperates with the first wheel of the upstream transfer means, while the means for returning the cartridge-cases cooperate with the second wheel of the transfer means downstream of the operating drum, said two transfer means passing the cartridge-cases with a normal spacing between consecutive cartridge-cases, and

the recycling drum is provided with means to change the level of travel of the cartridge-cases thereover to cause the cartridge-cases to pass from the first wheel of the downstream transfer wheels to the second wheel of the upstream transfer means,

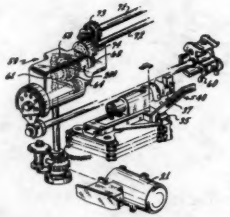
whereby to permit at one time the use of simple elements at the different levels of the transfer wheels, with guiding means without switching means, all while increasing the angular displacement between the two levels of the operating drum to permit the interposition of means for shaping or treating of the cartridge-cases, the two operations of treatment being varnishing or gumming of the flange of a cartridge-case on the one hand and the percussion cap therefore on the other hand.

4,563,936

WEAPON WITH NEXT ROUND SELECT FEED SYSTEM

Michael M. Cleary, Pacific Palisades, and Luis A. Bohorquez, Inglewood, both of Calif., assignors to Hughes Helicopters, Inc., Culver City, Calif.

Filed May 28, 1982, Ser. No. 383,149
Int. Cl.[4] F41D *10/32*; F41F *9/00*
U.S. Cl. 89—11 **16 Claims**



1. In an externally driven gun in combination with a source of external power for driving said gun including an ammunition feeder and firing mechanism, said feeder including at least one sprocket for feeding ammunition into said firing mechanism within said gun, a gear transmission comprising;

input means for providing a driving torque for said sprocket, said input means being coupled to said source;

accelerating means for converting substantially uniform angular velocity into oscillatory angular velocity and

output means coupled to said accelerating means for coupling said oscillatory angular velocity from said accelerating means to said sprocket for delayed feeding of ammunition into said firing mechanism of said gun, said delayed feeding being timed relative to firing of said ammunition according to a predetermined relationship, said accelerating means being coupled to said output means,

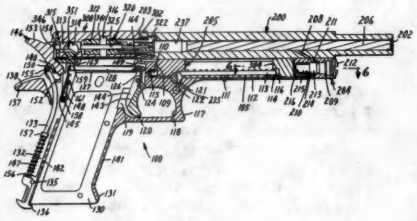
whereby an externally powered gun driven at a uniform speed feeds ammunition into said firing mechanism of said gun at a nonlinearly changing velocity wherein the velocity of said sprocket and ammunition fed thereby is selectively provided with periodic acceleration and deceleration in order to delay said handing-off until the last opportunity possible to do so.

4,563,937

GAS ACTUATED PISTOL

Bernard C. White, Robbinsdale, Minn., assignor to Magnum Research, Inc., Minneapolis, Minn.

Filed Jan. 4, 1983, Ser. No. 455,506
Int. Cl.[4] F41C *5/02*
U.S. Cl. 89—185 **7 Claims**



1. A gas operated pistol comprising:

(A) a frame assembly having a forward trough-shaped portion and breech end bearing means comprising first horizontal grooves,

(B) resilient biasing means in said trough-shaped portion of said frame assembly,

(C) a barrel assembly having means for securing said barrel assembly to said frame assembly and comprising:

(1) a barrel in said forward trough-shaped portion having muzzle and breech ends,

(2) a passage through the wall of said barrel,

(3) a muzzle locking assembly projecting beneath the muzzle end of said barrel and supported in the forward end of said trough-shaped portion of said frame assembly, said muzzle locking assembly including a housing defining a chamber with an opening into said trough-shaped portion of said frame assembly, and an orifice connecting said passage to the muzzle end of said chamber,

(4) a breech locking assembly projecting beneath the breech end of said barrel and supported by said breech end bearing means in the rearward end of said trough-shaped portion of said frame assembly, said breech end locking assembly comprising (i) a vertically curved muzzle-facing cam surface, (ii) a locking cam pivotable on said frame to engage said cam surface to secure said barrel assembly to said frame and (iii) first horizontal locking rails on opposed vertical sides of said breech locking assembly for engagement in said first horizontal grooves in said breech end bearing means,

(D) a bolt carrier assembly slidable on said frame assembly, said bolt carrier assembly comprising a rearward bolt section aligned with said barrel, and a forward barrel-receiving section having a lug connecting spaced vertical side walls, said lug being positioned in said forward trough-shaped portion of said frame assembly, and said bolt carrier assembly being urged toward the muzzle end of said pistol by said resilient biasing means, and

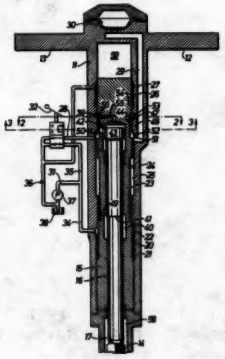
(E) a piston slidable in said chamber in said muzzle locking assembly, said piston projecting out of said chamber and engaging said lug on said bolt carrier.

4,563,938

PRESSURE FLUID OPERATED PERCUSSIVE TOOL

Stig R. Henriksson, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Jul. 23, 1984, Ser. No. 633,190
Claims priority, application Sweden, Aug. 1, 1983, 8304210
Int. Cl.[4] F01B *15/02*
U.S. Cl. 91—25 6 Claims



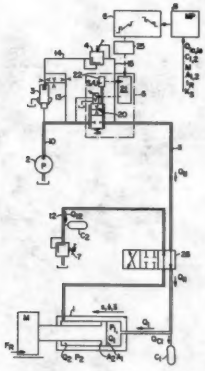
1. A pressure fluid operated percussive tool comprising:
a housing (11);
a cylinder (15) reciprocable in said housing (11) in an axial direction of said cylinder;
a piston hammer (16) reciprocable in said cylinder (15) and arranged to impact upon an anvil surface (17) coupled to a work implement (14);
a constantly pressurized chamber (20) between said housing (11) and said cylinder (15) for biassing said cylinder (15) forwardly in said housing (11);
a first chamber (40) for urging said piston hammer (16) rearwardly in said cylinder (11);
a periodically pressurized and depressurized second chamber (42) between said piston hammer (16) and said cylinder (15) for urging said piston hammer (16) forwardly in said cylinder (11);
an inlet (28) which is constantly pressurized during operation of said tool;
an inlet chamber (25) formed between said housing and said cylinder (15) and which is constantly coupled to said inlet (28);
an outlet chamber (27) formed between said housing (11) and said cylinder (15) at the rear of said inlet chamber (25) and which is constantly coupled to an outlet (36);
valve means comprising a valving chamber (48) located intermediate said inlet and outlet chambers (25,27) and which is arranged to be alternatively coupled to said inlet and outlet chambers (25,27) in response to the axial position of said cylinder (15) in said housing (11), said valving chamber (48) being constantly connected to said second chamber (42) by means of a passage (50) through said cylinder (15);
said piston hammer (16) being arranged to close off a rear end portion (57) of said second chamber (42) from said passage (50) from said valving chamber (48) when said piston hammer (16) reaches a rear end position in said cylinder (15);
a trigger passage (55) leading between said rear end portion (57) of said second chamber (42); and
a triggering valve means (56) formed between said housing (11) and said cylinder (15) and which is arranged to alternatively pressurize and drain said trigger passage (55), said triggering valve means (56) being arranged to pressurize said trigger passage (55) only when said cylinder (15) is forwardly of a position which is a predetermined distance forwardly of the position in which said valving chamber (48) is opened to said inlet chamber (25).

4,563,939

HYDROSTATIC OR PNEUMATIC DRIVE AND METHOD OF OPERATING SAME

Ronald Siegrist, Oberuzwil, Switzerland, assignor to Vickers, Incorporated, Troy, Mich.

Filed Jun. 9, 1983, Ser. No. 502,524
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 3222008
Int. Cl.[4] F01L *25/08;* F15B *13/16;* H03K *4/08*
U.S. Cl. 91—275 19 Claims



1. A method of operating a pressure·fluid drive device for accelerating and decelerating a mass, which drive device includes a pressure fluid source, a valve means and a pressure fluid actuated motor means, said valve means having a controllable flow opening for metering-in an increasing and decreasing fluid flow to said motor means, which is subject to a generally increasing or decreasing fluid pressure, whereby said fluid is compressed or decompressed, respectively, resulting in a compression or decompression volume which increases or decreases, respectively, the accelerating or decelerating rate of said mass relative to a condition without such compression or decompression, said metering-in for accelerating said mass including the following steps:
(a) from a first initial flow value, said increasing fluid flow is abruptly and temporarily increased by a volume flow rate which corresponds at least to said compression volume;
(b) after said temporary increased volume flow rate has been metered-in, said increasing fluid flow is metered-in, beginning with a level near to said first initial flow value and ending with a lever near a desired first final flow value;
(c) when said increasing fluid flow approaches said first final flow value, said metered-in flow is abruptly and temporarily decreased by a volume rate which corresponds to said compression fluid, and thereafter said fluid is metered-in at said first final flow value; said metering-in for decelerating said mass including the following steps:
(d) from a second initial flow value, said decreasing fluid flow is abruptly and temporarily decreased by a volume flow rate which corresponds to said decompression volume;
(e) after said temporary decreased volume flow rate has been metered-in, said decreasing fluid flow is metered-in beginning with a level near to said second initial flow value and ending with a level near a desired second final flow value;
(f) when said decreasing fluid flow approaches said second final flow value, said metered-in flow is abruptly and temporarily increased by a volume rate which corre-

sponds at most to said decompression volume, if said second final flow value is not zero, and thereafter said fluid is metered-in at said second final flow value.

4,563,940

OIL INFEED DEVICE FOR AN ADJUSTABLE PITCH PROPELLER

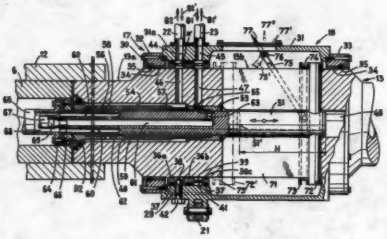
Wolfgang Wührer, Ravensburg, Fed. Rep. of Germany, assignor to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

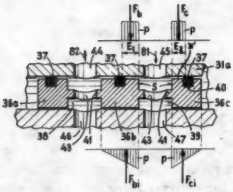
Filed Apr. 4, 1983, Ser. No. 482,038

Claims priority, application Switzerland, Apr. 15, 1982, 2277/82

Int. Cl.⁴ B63H *3/04, 3/08*

U.S. Cl. 92—106 **6 Claims**





1. An oil infeed device for a hydraulic servo motor of an adjustable pitch propeller, comprising:

a non-rotatable housing member having a bore;

a hollow intermediate shaft for operating said servo motor;

said hollow intermediate shaft being arranged in said bore of said housing;

control means for controlling the supply of pressurized oil;

two oil supply passages formed in said housing member and flow connectable to said control means;

distributor ring means sealingly arranged in said bore of said housing and supported on said intermediate shaft;

axial sections formed at said distributor ring means;

two annular channels formed by said axial sections and extending about the circumference of said intermediate shaft;

each of said oil supply passages opening into a respective one of said two annular channels;

each said axial section comprising a seal-less inner bearing surface;

each said inner seal-less bearing surface bounding a respective bearing gap formed with said intermediate shaft and open in both axial directions;

each axial section having a larger diameter which is smaller than the diameter of said bore of said housing member in order to form a gap permitting radial adjusting displacements of the related one of said axial sections;

radially flexible holding means interconnecting neighboring ones of said axial sections operatively associated with the same annular channel;

annular sealing ledges extending around an outer circumference of said distributor ring means on both sides of side annular channels for sealingly guiding said distributor ring means in said bore of said housing member;

connecting passages formed in said intermediate shaft and connecting said annular channels to working chambers of the servo motor; and

said radially flexible holding means permitting said radial adjusting displacements of each said related one of said axial sections to provide for good sealing contact of said annular sealing ledges against said bore of said housing member.

4,563,941

HYDRAULIC ACTUATOR FOR CONTROL OF VALVES

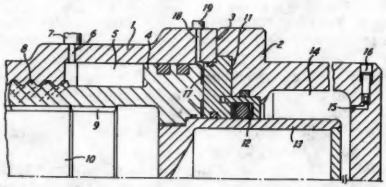
Joergen Soendergaard, Naestved, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Sep. 12, 1984, Ser. No. 649,693

Claims priority, application Denmark, Sep. 16, 1983, 4224

Int. Cl.⁴ F01B *7/00*

U.S. Cl. 92—134 **1 Claim**



1. A hydraulic actuator assembly for controlling a valve, comprising, a housing defining a cylindrical bore forming a piston chamber and an end cap section forming an end chamber, transversely extending wall means having a central opening and being between said piston and end chambers, said housing forming a sleeve portion spaced from said wall means and having a central opening of lesser diameter than said wall means, piston means having a head portion slidably disposed in said piston chamber and a body portion of lesser diameter extending through said sleeve portion central opening, an actuator spindle connected to said piston means body portion, a cylindrically shaped piston extension of smaller diameter than said piston attached to said piston and extending into said end chamber, said piston extension being in sliding and sealing engagement with said wall means central opening, said housing having inlet and outlet passage means for said piston chamber to operate said piston, said housing having inlet air passage means for providing a piston return pressure gas in said end chamber, said piston head having a cylindrically shaped protruding portion which forms annular chamber means in surrounding relation to said piston extension when said protruding portion is in abutting engagement with said wall means, said housing having emergency passage means in fluid communication with said annular chamber when said protruding portion abuts said wall means to effect an emergency moving of said piston in a valve closing direction when a pressure medium is admitted into said emergency passage means.

4,563,942
EQUIPMENT PART COVERED BY A CASING AND HAVING A FAN

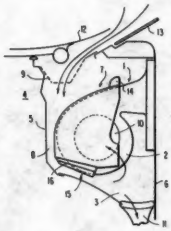
Hermann Grimm, Ostelsheim; Volkmar König, and Gernot Karioth, both of Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 25, 1982, Ser. No. 436,704

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1981, 3142484

Int. Cl.⁴ B60H *1/28*

U.S. Cl. 98—2.16 **9 Claims**



1. Apparatus for a motor vehicle having an equipment part having at least one of a fan, a heating, ventilation and air conditioning system, the equipment part being accommodated in a space located between one of an engine compartment and a trunk and a splash wall, and a casing means surrounding the equipment part for deflecting water from entry into the equipment and forming, together with a wall of the space on the same side as the engine compartment or trunk, a channel through which fresh air only is supplied to an air-inflow orifice in the equipment part, comprising

second means surrounding the equipment part at least from below, and having at least one dimension variable in magnitude for yielding during installation and during removal of the casing means and connected to the casing means for maintaining the casing means in its water deflecting condition after installation of the casing means.

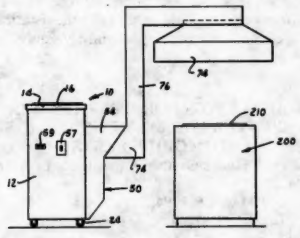
4,563,943
FILTER APPARATUS FOR HIGH SPEED PRINTERS

John C. Bertelsen, 3060 Baker Rd., Dexter, Mich. 48130

Continuation-in-part of Ser. No. 443,122, Nov. 19, 1982, abandoned. This application Mar. 6, 1985, Ser. No. 708,649

Int. Cl.⁴ F23J *11/00*

U.S. Cl. 98—115.1 **3 Claims**



1. In a computer printing room, the combination comprising:

a printer housing having an outlet opening;

high speed laser or the like printing means in the printer housing providing a source of airborne carbon black particles employed in the printing process and disposed to pass through the outlet opening;

a filter housing having an inlet opening, and an outlet opening, the filter housing being spaced from the printer housing;

a plurality of filter means suited for removing airborne paper dust, carbon black and the like, removably mounted in the filter housing between the inlet opening and the outlet opening;

fan means mounted in the filter housing for moving air carrying such airborne particles into the inlet opening, through the filter means, and out the outlet opening;

a duct having an outlet opening, and means attaching the duct to the filter housing such that the duct outlet opening is adjacent the filter housing inlet opening; and

a hood mounted on the duct to define a hood inlet opening remote from the filter housing inlet opening and horizontally spaced therefrom, the hood inlet opening being disposed closely adjacent and aligned with the outlet opening of the printer housing, but not being attached thereto, to receive airborne particles from the printer housing outlet opening and to pass such airborne particles through the duct and said filter means such that the airborne particles are removed by the filter means, and the filtered air passes from the filter housing outlet opening into said computer printing room.

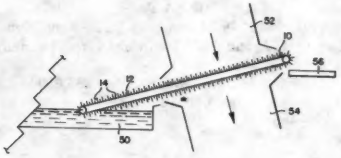
4,563,944
PRODUCT ORIENTING CONVEYOR

Warren L. Tate, Duncanville, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.

Filed Jun. 29, 1984, Ser. No. 626,030

Int. Cl.⁴ A47J *37/12*

U.S. Cl. 99—355 **15 Claims**



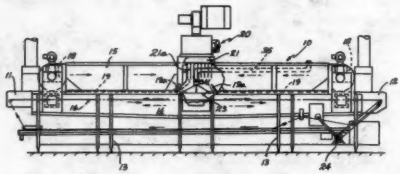
1. An automatic product orienting elongated endless conveyor having one end extending into a body of liquid for automatically removing generally disc-shaped food articles from the body of liquid and automatically orienting the articles with the plane of the faces of the articles generally vertically, but not necessarily parallel from article to article so that liquid may drain by gravity from the food articles, said conveyor comprising an endless conveyor having a drainable surface, said surface including means for automatically orienting the articles vertically, said automatic orienting means comprising a plurality of rods extending from said surface in a generally perpendicular orientation with said surface, wherein the rods are of at least two different lengths, said rods being arranged in a generally symmetrical pattern in which the nearest adjacent rods are separated by a distance less than the average diameter of the articles and the nearest adjacent rods are generally of different lengths to thereby cause the articles to fall on their edges between the rods with the planes of the faces of the articles generally vertical, said rods comprising short rods and long rods, said long rods having a length which is within the range of about 75% to 150% of the average diameter of the articles, and the long rods and the short rods having a length differential within the range from about 60% to 65%.

4,563,945

HEAT SHIELD-STEAM DISTRIBUTOR FOR COOKING OVEN

Yong Y. Hwang, Huron, Ohio, assignor to Stein Associates, Inc., Sandusky, Ohio

Filed Nov. 13, 1984, Ser. No. 670,383
Int. Cl.[4] A47J 27/04
U.S. Cl. 99—443 C 8 Claims



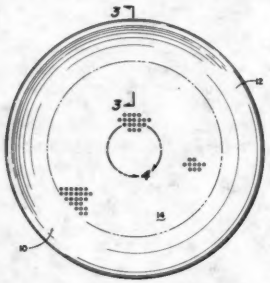
1. Heat shield-steam distributor means for use in an oven for cooking food product, said oven having an enclosed elongated food cooking chamber through which food product is moved along a conveyance path and wherein a cooking medium comprising a mixture of hot air and steam in controllable proportions is brought into contact with the food product as it is moved along the conveyance path and wherein the primary heat source for heating the cooking medium is a combustion unit adapted to direct flame into the cooking medium in the cooking chamber of said oven and toward the moving product, said heat shield-steam distributor means being located between said combustion unit and said food product and effective to protect said product from direct exposure to the flame of said combustion unit, and said heat shield-steam distributor means also embodying means for distributing steam into said cooking chamber.

4,563,946

PIZZA PAN

Richard A. Barlow, 949 Marymount Rd., Salina, Kans. 67401, and Eugene T. Logan, 2404 Parkwood Cir., Claremore, Okla. 74017

Filed Jul. 24, 1984, Ser. No. 633,850
Int. Cl.[4] A47J 37/01
U.S. Cl. 99—450 5 Claims



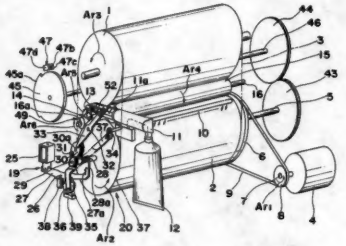
1. A pizza pan comprising a substantially flat bottom, a large radius, smooth peripheral wall conterminous with the bottom as a uniform uninterrupted surface, the wall extending upwardly and outwardly therefrom, and a plurality of spaced relatively small apertures provided in the bottom and contained within a central area smaller than the diameter of the bottom leaving a border of no apertures for the even distribution of heat to the central underside of the pizza during a pizza baking operation.

4,563,947

INK DETECTING DEVICE FOR ROTARY PRINTER

Ken Matsushita; Hiroki Ikeda, and Yoshihide Sugiyama, all of Wakayama, Japan, assignors to Duplo Seiki Corporation, Wakayama and Duplo Manufacturing Corporation, Komae, both of, Japan

Filed Jan. 29, 1985, Ser. No. 696,066
Claims priority, application Japan, Feb. 1, 1984, 59-17739
Int. Cl.[4] B41F 15/40, 31/02
U.S. Cl. 101—122 7 Claims



1. For use in a rotary printing machine comprising at least one printing drum supported for rotation, an image carrier medium having an image area bearing an image to be printed on an image supporting material, and an ink supplying means to selectively supply a proper quantity of a printing ink onto desired portions of the outer periphery of the printing drum, in an axial direction thereof, said printing ink on the outer periphery of the printing drum being, during the rotation of the printing drum, allowed to penetrate through the image area of the image carrier medium to the image supporting material, an ink detecting device which comprises, in combination:

a plurality of sensor rolls rotatably supported in series on a single fixed shaft in frictional contact with the printing drum through a layer of printing ink interposed between said sensor rolls and said printing drum;

a first means for separately detecting rotational speed of each sensor rolls;

a second means for detecting rotational speed of the printing drum;

a control means for comparing the rotational speed of each sensor roll and corresponding reference values respectively indicative of rotational speed of each sensor roll measured under such a condition that optimum quantity of printing ink is applied on the outer periphery of the printing drum, and accordingly controlling said ink supplying means so as to replenish the printing ink onto desired portions of the outer periphery of the printing drum which correspond to such sensor rolls the rotational speed of which exceeds the corresponding reference values.

4,563,948

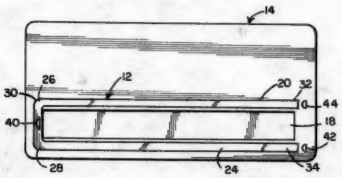
STENCIL APPARATUS FOR USE WITH ABRASIVE PARTICLE SPRAYER FOR MARKING ITEMS SUCH AS AUTOMOBILE PARTS

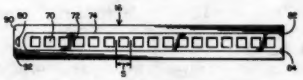
Terrance Cafferty, Huntington, N.Y., assignor to Auto Id Inc., Wilmington, Del.

Filed Mar. 13, 1984, Ser. No. 589,024
Int. Cl.[4] B41L 13/12; B05C 17/08
U.S. Cl. 101—128 16 Claims

1. Apparatus comprising a base member provided with an opening and including tracks on opposite sides of said opening, a plurality of plates arrangeable in and extending between said tracks to obturate said opening at least in part, said plates being provided with openings constituting indicia of intelligence including characters, and a mask slidable in said tracks to a position superposed on said plates, said mask being provided with windows wherethrough the openings in the plates are

exposed, said mask holding said plates in position on said base member, said base member and mask respectively comprising cooperative interlocking means which engage with each other





as the mask slides in said tracks, the thusly engaged interlocking means preventing detachment of said mask from said tracks and thereby preventing detachment of said plates from said track and said base.

4,563,949

PRINTING PRESS

Dieter Rogge, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

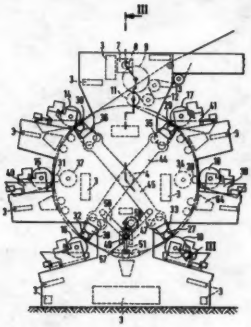
Filed Apr. 30, 1984, Ser. No. 605,562

Claims priority, application Fed. Rep. of Germany, May 2, 1983, 3315891

Int. Cl.⁴ B41F *5/24*

U.S. Cl. 101—174 **5 Claims**

1. A printing press, which comprises a plurality of inking mechanisms having inking cylinders, and a plurality of plate cylinders and backing cylinders mounted on support shafts and driven by a common central gear, the plate cylinders, inking mechanisms and inking cylinders being mounted on carriages which are mounted for movement toward and away from the associated backing cylinders along respective guides, said guides being located at spaced positions around the central gear, said guides extending from approximately tangentially to radially of the central gear, gears of the backing cylinders have pitch circles located relative to the central gear such that the pitch circles will, when projected axially, make contact with a pitch circle of the central gear, and wherein, at contact point zones of the press, gears of the plate cylinders engage the central gear as well as the gears of the backing cylinders, a plurality of two armed levers pivotally mounted at their centers on the central shaft of said central gear to intersect in pairs, support shafts of the respective backing cylinders being mounted at the ends of said two-armed levers, and means for



simultaneously pivoting pairs of the two-armed levers by equal amounts in opposite directions.

4,563,950

ROTARY PRINTING MACHINE WITH PAPER GUIDE

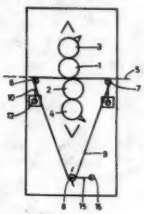
Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Nov. 15, 1984, Ser. No. 671,556

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1984, 3402515

Int. Cl.⁴ B41F *13/02*

U.S. Cl. 101—178 **13 Claims**



1. Rotary offset printing machine for printing on a flexible substrate, subject to flutter, and random oscillations, having

at least one blanket cylinder (**2, 41–44, 49–52, 59, 62,63, 75,76**);

at least one plate cylinder (**3,4,64,65,77,78**) associated with each blanket cylinder; and

at least one impression cylinder (**61,72,73**) positioned for engagement along a nip line of contact against a respective rubber blanket cylinder, with the substrate interposed and supported thereat, to define a printing line with the respective rubber blanket cylinder,

comprising, in accordance with the invention,

means to suppress flutter and random movement of the substrate transverse to an intended substrate path (**5,47**) located between, and diverging from the respective surface of said impression (**61,72,73**) and blanket (**63,75,76**) cylinders downstream of said nip line of contact, including

a thin, endless, flexible guide element (**9, 40, 48, 54, 68, 83, 84**) passing, along and on a portion of a major surface of said substrate, through said nip between said blanket and impression cylinders and serving to increase support for the substrate adjacent the print line, said guide element having a width which is up to the width of an unprinted zone of the substrate; and

a plurality of guide rollers (6, 7, 8; 17; 45, 46; 55, 56, 57, 58; 69, 70; 80, 81, 82) guiding the endless guide element about a respective blanket cylinder and along a portion of the path (5, 47) of the substrate immediately adjacent the printing line.

4,563,951

CLAMPING AND ADJUSTING DEVICE FOR THE SMOOTHING MEANS ON THE STORAGE CYLINDER OF A SHEET OFFSET PRESS

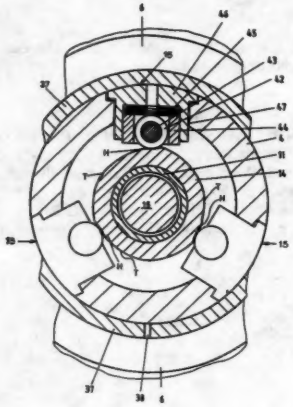
Josef Mathes, Offenbach am Main, and Roland Höll, Weiterstadt, both of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 25, 1985, Ser. No. 715,476

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1984, 3410689

Int. Cl.[4] B41F *5/00*

U.S. Cl. 101—216 7 Claims



1. A clamping and adjusting device for the smoothing means on a storage cylinder of a sheet offset press adapted for selective first printing or perfecting printing operation, wherein the smoothing means are mounted by way of carrying elements on a hollow main shaft of the storage cylinder and are adapted to be released, adjusted and, by way of clamping elements, clamped relative to the outer shell of the storage cylinder by central actuators, comprising, in combination, a unitary hollow drive shaft rotatably mounted within the hollow main shaft of the storage cylinder and having a first control element at one end and clamping cams on its periphery adjacent its other end, clamping elements including cam followers in bearing relationship between the clamping cams and the carrying elements; and an adjusting shaft rotatably mounted within the unitary hollow drive shaft and having a second control element at one end and having at its other end a gear wheel forming part of epicyclic gearing adapted to pivot the smoothing means on the storage cylinder.

4,563,952

LITHOGRAPHIC WATER BASED FOUNTAIN SOLUTION CONCENTRATES

Bernard A. Thiebaut, Oilliers, France, assignor to Inmont Corporation, Clifton, N.J.

Division of Ser. No. 597,798, Dec. 21, 1983. This application Jan. 22, 1985, Ser. No. 693,541

Int. Cl.[4] B41M *1/06*

U.S. Cl. 101—451 7 Claims

1. In a method of lithographic or web-offset printing comprising the preparation of a fountain solution by mixing a water dilutable fountain solution concentrate in an amount of about 1.0 wt.% to 6.0 wt.% with water wherein said fountain solution concentrate contains water, a buffer, a polyol and surfactant, and treating a planographic plate with said fountain solution such that the non-image areas of said plate are rendered hydrophilic, thereby inhibiting the deposition of ink on said areas and improving the printing process, the improvement comprising, as

the buffer, at least one salt of (a) a polycarboxylic acid and (b) an organic amine, wherein the polycarboxylic acid has a pK_a between about 3 and about 6, the organic amine has a pK_b between about 2 and about 9, said fountain solution having a pH between about 4.7 and about 5.3, a surface tension between about 32×10^{-3} Newton/m and about 52×10^{-3} Newton/m and sufficient buffer effect such that the pH variation will be less than about one pH unit when 5 cc of the decinormal HCl is added to 100 cc of said fountain solution.

4,563,953

TAMPING HEAD WITH LIMITING STOP FOR TOOL RECIPROCATION

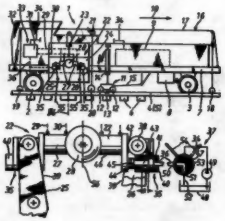
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft mbH, Vienna, Austria

Filed May 3, 1983, Ser. No. 491,027

Claims priority, application Austria, Jul. 7, 1982, 2643/82

Int. Cl.[4] E01B *27/16*

U.S. Cl. 104—12 6 Claims



1. In a tamping head for a mobile track working machine arranged for tamping ballast underneath a respective one of a plurality of spaced ties resting on the ballast and having two track rails fastened thereto, the tie defining cribs therebetween, the tamping head comprising a tamping tool carrier vertically adjustably mounted on the machine, a vibratory tamping tool mounted on the carrier for immersion in a respective one of the cribs adjacent the respective tie and for pivoting towards and away from the tie in a reciprocating stroke between two end positions, and a hydraulic drive for pivoting the tamping tool, the hydraulic pivoting drive including a cylinder element and a piston element, and a reciprocating stroke limiting stop cooperating with the hydraulic pivoting drive for selectively adjusting a respective one of the end positions: a hydraulic actuator fixedly connected to one of the hydraulic drive elements for setting the stop for the selective adjustment of a respective end position, the hydraulic actuator including a cylinder element and piston element, the piston element of the hydraulic actuator including a piston rod having a free end extending from the cylinder element of the hydraulic actuator, the free piston rod end constituting the stop and the other hydraulic drive element having an abutment fixedly connected thereto and arranged to cooperate with the free piston rod end, the hydraulic actuator piston element being movable in relation to the cylinder element, the hydraulic pivoting drive and the hydraulic actuator having axes extending parallel to each other, and the hydraulic actuator being mounted on the hydraulic drive.

4,563,954

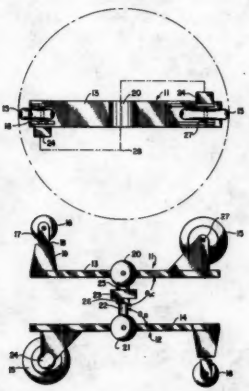
FOUR-WHEELED ADJUSTABLE VEHICLE

Tokuji Okada, and Takeo Kanade, both of Pittsburgh, Pa., assignors to Carnegie-Mellon University, Pittsburgh, Pa.

Filed Oct. 11, 1983, Ser. No. 540,178

Int. Cl.[4] B61B *13/10*

U.S. Cl. 104—138 G **7 Claims**



1. A vehicle for automatically traversing the interior of a pipe comprising a pair of two-wheeled powered trucks each including a separate bolster to which its wheels are attached, the bolsters being attached to oppostie ends of a stretcher member so that the trucks travel along diametrically opposite paths on the pipe wall.

4,563,955

CHAIRLIFT OR GONDOLA LIFT INCLUDING FRICTION DRIVE WHEELS

Serge Tarassoff, Fontaine, France, assignor to Pomagalski S.A., Fontaine, France

Filed Jun. 25, 1984, Ser. No. 624,281

Claims priority, application France, Jul. 6, 1983, 83 11475

Int. Cl.[4] B61B *12/00*; B61F *19/00*; B65G *45/00*; B60S *3/04*

U.S. Cl. 104—168 **11 Claims**

1. Overhead cable transport installation, in particular a gondola lift or a chairlift comprising:

a continuously moving endless overhead cable extending between two terminals,

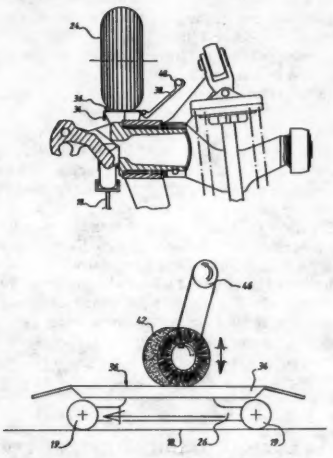
a transfer rail in each terminal for connecting the downhill line and the uphill line constituted by said endless cable,

carriages, each supporting a gondola or a chair and having a detachable grip for coupling on said cable, support wheels for running on said rail in the terminal, and a plate extending in the carriage travel direction and including an upper friction face,

a grip actuation device for uncoupling the grip from the cable at the entrance of the terminal, the carriage running on the transfer rail,

at least one driven friction wheel disposed along the travel path of the grip carriage in the terminal for engaging said friction face for braking, accelerating or driving the carriage uncoupled from the cable and running on the transfer rail,

clearing means disposed along the carriage travel path to clear said upper friction face from frozen precipitant before the passage of the carriage along said friction



wheel so as to provide a correct friction drive of the carriage by said friction wheel.

4,563,956

TRAVELLING MECHANISM OF A TRANSPORT CAR RUNNING ON PROFILE RAIL TRACK

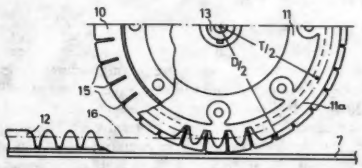
Edelbert Wiechert, and Herbert Lehmann, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 25, 1983, Ser. No. 555,160

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1982, 3243914

Int. Cl.[4] B61C *11/00*

U.S. Cl. 105—29 R **5 Claims**



1. A transport car drive assembly of a transport car for the conveying of files and/or transport goods having similar dimensions or weight contained in a transport car container,

said drive assembly comprising a transport car drive mechanism for propelling a transport car associated therewith and running on horizontal and, in sections, vertical profile rail tracks,

said transport car drive mechanism including a frictional wheel having a track-engaging periphery defining an external diameter of the frictional wheel and having rolling frictional engagement with horizontal and vertical track surfaces during drive of an associated transport car along horizontal and vertical profile rail tracks,

said transport car drive mechanism further including a toothed wheel for rolling engagement with vertically disposed toothed racks of vertical profile rail tracks for

controlling the rate of movement of an associated transport car along such vertical profile rail tracks,

said transport car drive mechanism also including an electric motor providing the motive power therefor and having a drive shaft driven thereby, said drive shaft carrying the frictional wheel and the toothed wheel for joint rotation therewith to effect the transport of an associated transport car, said toothed wheel having a pitch diameter smaller than the external diameter of the track-engaging periphery of the frictional wheel,

the frictional wheel having radial slots and being composed of an elastic material at least in regions thereof between the slots and close to the track-engaging periphery,

the dimensions of the radial slots and the spacing of the slots from one another being such that, taking account of the elasticity of the elastic material of the frictional wheel and the difference between the external diameter of the track-engaging periphery of the frictional wheel and the pitch diameter of the toothed wheel, the slip differential of the frictional wheel due to such difference in diameters during rolling engagement of the toothed wheel in a vertically disposed toothed rack is compensated by elastic deformation of the elastic material at the regions of the frictional wheel between neighboring slots.

4,563,957

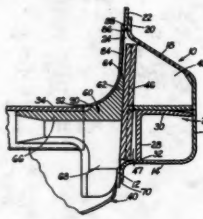
CAR BOTTOM-TO-SIDE SILL CONNECTION

Robert H. Billingsley; George Reed, both of St. Louis, and Arnold Schlobohm, Ballwin, all of Mo., assignors to ACF Industries, Incorporated, Earth City, Mo.

Filed Feb. 16, 1983, Ser. No. 467,099

Int. Cl.⁴ B61D *17/00, 5/00, 7/00*

U.S. Cl. 105—418 **7 Claims**



1. In a center stub sill railroad car having, at each end thereof, a center stub sill extending in longitudinal direction of the car along the centerline thereof, a pair of spaced side sills at the lower margin of the car and extending lengthwise of the car, each of said side sills being generally channel-shaped in cross section with the open face of each of said side sills facing generally inwardly of the car, a shear plate at each end of the car connected to a respective said center stub sill and to said side sills for transferring longitudinal train loads therebetween, a side plate extending upwardly from each of said side wills forming a respective side of said car, and a bottom extending inwardly between said side sills forming the bottom of the car, wherein the improvement comprises: a generally vertically disposed plate secured to the face of each of said side sills facing inwardly of the car generally at each end thereof proximate the securement of at least a portion of said shear plate to said side sill; a rigid one-piece member of a suitable weldable material welded to said plate for rigidly interconnecting said side sill, said shear plate, said bottom, and said side plate, said rigid one-piece member comprising a base having an outside face adapted to be welded to said plate, a body portion inwardly of the base, and a portion extending downwardly from said body portion welded to its respective said side sill and to said bottom, said body portion being welded to said shear plate, said base portion having a curved inner face for at least in part mating with a closure plate, the latter constituting a transition between said side plate and said shear plate.

4,563,958

FURNACE CHARGE PREHEATER

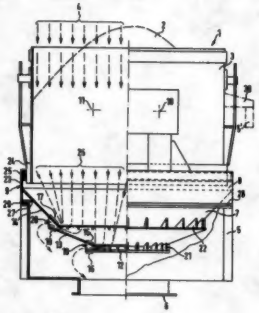
Ferdinand Minarik, Karlstein, and Hans-Joachim Paletzki, Viersen, both of Fed. Rep. of Germany, assignors to Fuchs Systemtechnik GmbH, Fed. Rep. of Germany

Filed Oct. 13, 1983, Ser. No. 541,422

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1982, 3238017

Int. Cl.⁴ F23G *5/02*

U.S. Cl. 110—219 **8 Claims**



1. Furnace charge preheater comprising a bucket for receiving charge material to be heated by means of a heating gas, said bucket having a bottom containing at least two half-shells adapted to be swung apart to an open position and swung together to a closed position, and wherein in the closed position of the bucket bottom, said bucket bottom has a central part having an outer edge portion, and at least one ring, the ring having an inner edge portion which overlaps said outer edge portion of the central part, and said outer edge portion of the central part being located beneath the inner edge portion of the ring at a distance therefrom, forming an annular gap for the passage of hot gases.

4,563,959

STEP TYPE STOKER WITH OSCILLATION MECHANISM

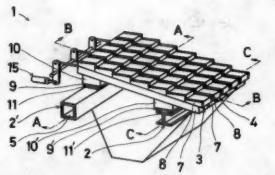
Koji Fujiwara, Osaka, Japan, assignor to Kabushiki Kaisha Takuma, Osaka, Japan

Filed Nov. 21, 1984, Ser. No. 673,706

Claims priority, application Japan, Jan. 9, 1984, 59-2463

Int. Cl.⁴ F23H *7/08, 7/14*

U.S. Cl. 110—281 **5 Claims**



1. A step type stoker with an oscillating mechanism comprising:

a plurality of stoker frames which are installed at fixed intervals in an upstream to downstream direction, and at least one of which is tubularly-shaped to form an air supply path;

movable fire grates each of which is formed of a plurality of fire-grate members installed in a step-like manner on a groove-shaped frame, said groove-shaped frame being equipped with an air path which is in communication with the air supply path in the aforementioned tubularly-shaped stoker frame at all times, said groove-shaped frame being supported by, but reciprocating on, the aforementioned stoker frames; and

fixed fire grates each of which is formed with a plurality of fire grate members installed in a step-like manner on a groove-shaped frame equipped with an air path which is in communication with the air supply path in the aforementioned stoker frame at all times, each said fixed fire grate being arranged to be adjacent to and parallel with the aforementioned movable fire grate, and being fixed on each of the aforementioned stoker frames;

wherein is further included at least one sliding box which is fixed to the underside of the groove-shaped frame of a movable grate which rides on an upper surface of a turbularly-shaped stoker frame, the air supply path in the stoker frame and the air supply path in the groove-shaped frame being in communication by means of a communicating path passing through said at least one sliding box.

4,563,960

SEWING MACHINE HAVING A DRIVE FOR A WORK CLAMP

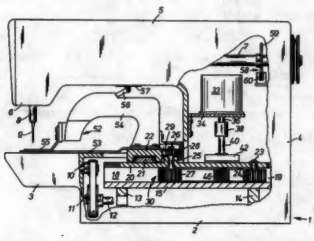
Ernst Albrecht, Hochspeyer, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Feb. 22, 1985, Ser. No. 704,643

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1984, 3406484

Int. Cl.[4] D05B *21/00*

U.S. Cl. 112—121.15 **9 Claims**



1. A sewing machine drive for moving a workpiece clamp relative to a reciprocating thread guide needle, comprising a slide, tail wheel means mounted to said slide for movement with respect to said slide, first and second stepping motors each having a driving shaft with a drive pinion, a draw member having first and second spaced apart strand portions each engaged with one drive pinion, said draw member being engaged with said tail wheel means for movement of said slide and said tail wheel means with selective rotation of at least one shaft, a plate member carried by said slide and operatively connected to said tail wheel means for movement of said plate member with respect to said slide with selective rotation of at least one shaft, said plate member being connected to the workpiece clamp whereby selective rotation of the drive shaft for each of said first and second stepping motors effects selective movement of said slide, said tail wheel means and said plate member to move the workpiece clamp.

4,563,961

TUFTING NEEDLE

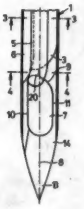
Walter Beyer, Eschweiler, and Joachim Beyer, Aachen, both of Fed. Rep. of Germany, assignors to Jos. Zimmerman, Aachen, Fed. Rep. of Germany

Filed May 18, 1984, Ser. No. 611,887

Claims priority, application Fed. Rep. of Germany, May 21, 1983, 8315049

Int. Cl.[4] D05B *85/00*

U.S. Cl. 112—222 **3 Claims**



1. A tufting needle of which the shank adjoining a ram is flat, has a yarn groove and is provided near its point with an eye which is elongate in the direction of the needle axis and at the end remote from the point has a curved upper edge, one side face of the shank being bevelled towards one of its longitudinal edges by a land and towards its other longitudinal edge by a bias grind reaching into the eye zone, characterised in that the zone of the upper eye edge (**9**), which zone is furthest from the point (**13**), is asymmetrically offset only towards the land (**6**) relatively to the central axis (**8**) of the eye (**7**).

4,563,962

BOUND-STATORS OR ROTORS FOR ELECTRICAL MACHINES

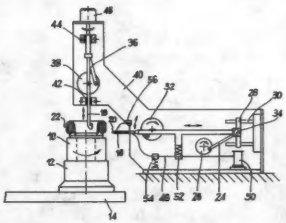
Willi Muskulus, An der Pfaffenmauer 17, 6000 Frankfurt/Main 60, Fed. Rep. of Germany

Filed May 25, 1982, Ser. No. 381,754

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1981, 3121934

Int. Cl.[4] D05B *3/00, 23/00;* H01F *41/02*

U.S. Cl. 112—262.1 **6 Claims**



1. In a method of producing a hollow stator or rotor for electrical machines, said stator or rotor comprising winding ends having peripherally spaced openings adjacent said winding ends and wire thread wound thru said openings and around said winding ends, the steps of:

(a) mounting said stator or rotor so that it is rotatable about its longitudinal axis;

(b) providing a supply of wire thread;

(c) forming loops of said wire thread in succession to one another and in progression about the periphery of said stator or rotor;

(d) drawing loops through respective loops formed previously from said wire thread;

(e) drawing all of said loops radially inwardly from the outside of said rotor or stator into the hollow interior thereof; and

(f) performing step (d) on the internal side of said winding ends.

4,563,963

METHOD OF FORMING STOP STITCHES IN A COMPUTERIZED SEWING MACHINE

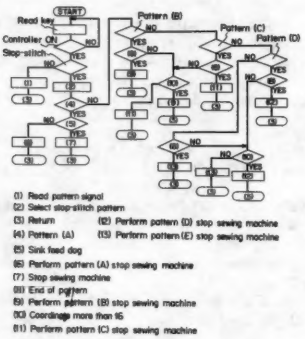
Susumu Hanyu, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1984, Ser. No. 602,416

Claims priority, application Japan, Apr. 21, 1983, 58-69233

Int. Cl.[4] D05B *3/02*

U.S. Cl. 112—266.1 **3 Claims**



1. A method of forming stop stitches in a computerized sewing machine having a needle with a maximum needle swinging region having a plurality of needle positions, and a fabric feed dog, the sewing machine storing needle amplitude control signals and fabric feed signals for forming a plurality of stitch patterns, and also temporarily storing a plurality of patterns in accordance with a designation by an operation and pattern stitching order, the method comprising the steps of: storing a plurality of different stop stitch patterns as a combination of signals, each being substantially specific to individual stitch patterns of the plurality of stitch patterns; selecting a number of the stitch patterns so that they may be stitched in series; designating a stop stitch while said selected stitch patterns are being stitched; and selecting, by means of a micro-computer, a desired stop stitch pattern from said plurality of stop stitch patterns so that said desired stop stitch pattern is specific to a selected stitch pattern which is being stitched when said stop stitch designation is made, said micro-computer detecting whether the needle is in a position laterally of a center position of the maximum needle swinging region when said step of designating a stop stitch is performed, said micro-computer also determining the position of an initial stitch for said selected stop stitch pattern in dependence upon the detected needle position.

4,563,964

SEWING MACHINE DRIVE CONTROL

Gunnar O. M. Sjödin, Lekeryd, Sweden, assignor to Husqvarna Aktiebolag, Sweden

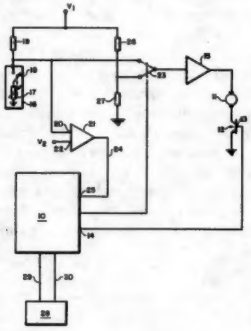
PCT No. PCT/SE82/00106, § 371 Date Dec. 20, 1982, § 102(e) Date Dec. 20, 1982, PCT Pub. No. WO82/03879, PCT Pub. Date Nov. 11, 1982

PCT Filed Apr. 5, 1982, Ser. No. 453,886

Claims priority, application Sweden, Apr. 30, 1981, 8102758

Int. Cl.[4] D05B *69/26*

U.S. Cl. 112—275 **6 Claims**



1. In an electronic sewing machine having a motor for moving a needle upwardly and downwardly, an operator foot pedal control, and control means for varying the speed of the motor by controlling the current to said motor in response to movement of said operator control, said foot pedal control having an upper position the improvement further comprising position detectors for sensing the upper and lower end positions of said needle, said foot pedal control having a switch operable at said upper position, said control means being responsive to operation of said switch at said upper position for driving said motor at a lower speed and then stopping the motor when the upper position detector indicates the uppermost positioning of said needle, said control means being further responsive to operations of said switch in periods less than one-half of the movement cycle of said needle for moving said needle to the next respective position of said uppermost and lowermost positions, whereby an operator may selectively stop said needle at said uppermost and lowermost positions by movement of said foot pedal control and when the foot pedal is actuated for a period longer than one half of the movement cycle said position detectors are disconnected.

4,563,965

ACOUSTICAL SHIELD ASSEMBLY AND MATING THREAD PREGUIDE UNIT

Lee W. Gregory, Hickory, N.C., assignor to Marvel Specialty Company, Hickory, N.C.

Filed Aug. 2, 1984, Ser. No. 636,834

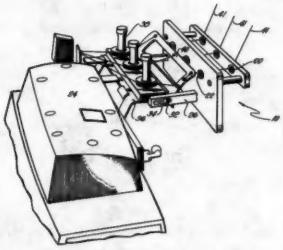
Int. Cl.[4] D05B *47/00, 77/00*

U.S. Cl. 112—302 **15 Claims**

1. An acoustical shield assembly and thread preguide unit adapted for attenuating noise generated by a sewing machine of the like,

said acoustical shield assembly including a series of panels closely spaced from and substantially surrounding and conforming to the sewing machine so as to be operative in attenuating noise generated by the sewing machine, said acoustical shield assembly further including an opening for easy access to the sewing machine during routine operation;

means for mounting said preguide unit to the sewing machine; and



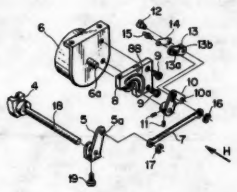
means for mating said preguide unit in substantially sealing relation with said acoustical shield assembly for maximum noise attenuation.

4,563,966

SWITCHING MECHANISM FOR ELECTRONICALLY CONTROLLED SEWING MACHINE

Yasuro Sano, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Jan. 6, 1984, Ser. No. 568,805
Claims priority, application Japan, Jan. 19, 1983, 58-5860
Int. Cl.⁴ D05B *3/02*
U.S. Cl. 112—455 **4 Claims**



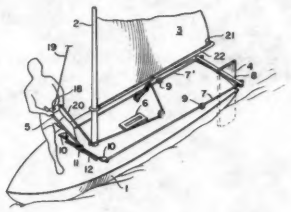
1. A switching mechanism for a sewing machine having a needle laterally swingable and vertically reciprocated to penetrate a fabric to form stitches therein; a fabric feeding device including a feed regulator variably adjustable to change a fabric feeding amount; a control motor including a rotor shaft having a central axis of rotation and having a predetermined minimum angular step with which said rotor shaft is steppingly and continuously rotated, said rotor shaft being connected to at least one of said needle and said feed regulator, and an electronic memory storing stitch control data for controllingly driving said control motor to control at least one of the needle swinging amplitude and the fabric feeding amount, the switching mechanism comprising link means connected to the rotor shaft of the control motor; follower means secured to said link means and spaced radially from said central axis of said rotor shaft; cam means including a first cam groove and a second cam groove each being arc shaped and spaced radially from said central axis of said rotor shaft and receiving therein said follower means, said first and second cam grooves each extending in a predetermined angular range and each having a different radius, said first cam groove and said second cam groove being connected to each other to form a single continuous cam groove; and transmission means including a transmission rod connecting said follower means to at least one of said needle and said feed regulator, said control motor being driven to switch said follower means between said first cam groove and said second cam groove and vice versa to thereby control a fabric feeding amount and a needle amplitude.

4,563,967

SPORT SAILBOAT STEERING AND BALANCING ARRANGEMENT

G. Timothy Oksman, 15 N. 29th St., Richmond, Va. 23223

PCT No. PCT/US82/00252, § 371 Date Sep. 29, 1982, § 102(e) Date Sep. 29, 1982, PCT Pub. No. WO83/02927, PCT Pub. Date Sep. 1, 1983
Continuation of Ser. No. 428,489, Sep. 29, 1982, abandoned. This PCT application Feb. 26, 1982, Ser. No. 665,517
Int. Cl.⁴ B63B *35/00*
U.S. Cl. 114—39 **9 Claims**



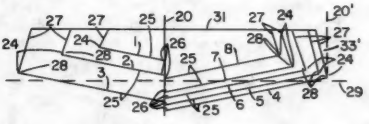
6. In a sport sailboat of the type including a hull, a fixed mast, a boom, a mainsail attached to the mast and boom, and a stern-mounted rudder, the improvement comprising providing a control station forward of the mast, a tiller at the control station, steering lines operably connecting the rudder to the tiller, a mainsheet rigged to be controllable from the control station, a trapeze harness at the control station attached high up on the mast by a support line, a slide car carried on a track running athwartships across the deck forward of the mast, a universal joint connecting the tiller to the car, and a transverse steering bar affixed to the rudder, the steering lines being arranged to connect the car to the transverse bar, whereby the tiller may move the car to cause the lines to adjust the rudder.

4,563,968

BOAT WITH IMPROVED HULL

Joseph Wawrzynek, 544 Lake Ave., Manchester, N.H. 03103

Continuation of Ser. No. 378,338, May 14, 1982, abandoned. This application Oct. 19, 1984, Ser. No. 662,768
Int. Cl.⁴ B63B *1/04*
U.S. Cl. 114—56 **3 Claims**



1. A boat comprising:

an elongated hull having a bottom curving gently from above the water line in the bow to below the water line in mid-section and up to the water line at the stern;

said hull having a curved keel and a curved chine, above the water line, a central plane passing centrally through the curved keel, the bottom extending symmetrically from the keel to the chine on both port and starboard sides and said bottom affording an outer surface on each side for the entire over all length of said boat;

said outer surface being free of steps, or water tunnels, and in any cross-section at right angles to the central plane from bow to stern, defining at the intersection with the curved keel, throughout the over all length of said boat, a straight hull line making an acute angle with the keel center line,

the said angles being equal each said straight hull line extending beyond the water line to the chine;

whereby, as the boat planes the bow and stern both rise out of the water at the same rate and the boat retains a relatively stable and level attitude.

4,563,969

SAIL HAVING VARIABLE PROPELLING AND LIFTING EFFECTS

Roland C. Le Bail, 80 Boulevard De Legenese B. P. 76, 56340 Carnac, France

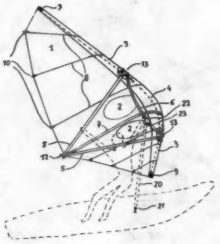
PCT No. PCT/FR82/00038, § 371 Date Nov. 3, 1982, § 102(e) Date Nov. 3, 1982, PCT Pub. No. WO82/03053, PCT Pub. Date Sep. 16, 1982

Continuation of Ser. No. 441,526, Nov. 3, 1982, abandoned. This PCT application Mar. 5, 1982, Ser. No. 685,593

Claims priority, application France, Mar. 11, 1981, 81 04814

Int. Cl.[4] B63H *9/04*

U.S. Cl. 114—102 **11 Claims**



1. A navigational sail device comprising:

an elongate front member;

a sail secured to said front member along the length thereof;

a plurality of prebent slats incorporated in the sail at laterally spaced locations and extending transversely to said front member, said slats being curved in the region of the front member so as to permanently support the sail in a windwardly concave shape in the region of the front member along the length of the front member;

a generally triangular manipulation device for manual control of said sail device during operation comprising a pair of elongate members connected together at one end and spaced apart at the other end thereof by an elongate connecting member forming the base of the triangle, said manipulation device being secured, at the apex of the triangle formed at said one end of said pair of elongate members, to the trailing edge of the sail centrally thereof, and said pair of elongate members being connected to the front member at the said other ends thereof.

4,563,970

SAIL WITH RETRACTABLE AIR DIRECTING ELEMENT

John G. Walker, 7 Kingfisher Close, Hamble, Hampshire, England

Filed Jun. 3, 1983, Ser. No. 500,951

Claims priority, application United Kingdom, Jun. 4, 1982, 8216269

Int. Cl.[4] B63H *9/06*

U.S. Cl. 114—103 **6 Claims**

1. A sail assembly comprising:

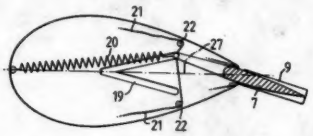
(a) a first upright rigid symmetrical aerofoil;

(b) a second upright rigid symmetrical aerofoil disposed closely behind the first aerofoil;

(c) means for mounting the second aerofoil for pivoting movement about an upright axis relative to said first aerofoil from an aligned position wherein the second aerofoil is aligned with the first aerofoil to positions angularly displaced from said aligned position and on each side thereof;

(d) an air-directing slat disposed at the trailing portion of the first aerofoil; and

(e) means for retracting the slat within the first aerofoil to allow the second aerofoil to pass through the said aligned position and for extending the slat outwardly and rearwardly of said first aerofoil to overlap the second aerofoil when said second aerofoil is angularly displaced from the said aligned position, said means for retracting and extending said slat including means for coupling said pivoting movement of said second aerofoil to the retraction and extension of said slat.



4,563,971

RETRACTABLE BOAT KEEL

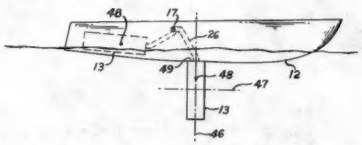
George P. Carver, 26 Linda Isle, Newport Beach, Calif. 92660

Continuation-in-part of Ser. No. 436,317, Jan. 27, 1983, abandoned. This application Oct. 25, 1984, Ser. No. 664,574

The portion of the term of this patent subsequent to Mar. 15, 2000, has been disclaimed.

Int. Cl.[4] B63B *41/00*

U.S. Cl. 114—132 **1 Claim**



1. A retractable boat hull keel, the keel operating at two positions, fully retracted or fully extended, the keel retracting by rotation about a fixed pivot, the rotation being stroked by a positive actuator, the pivot being located aft of the trailing edge of the keel, located aft of the major axis of the downwardly located keel, and located above the bottom line of the hull, the improvement comprising:

the keel pivot being located by a combination of two distances relative to the keel geometry, the keel center-of-gravity, and the bottom of the hull, the first distance being more than ¼ the maximum keel chord length aft of the trailing edge of the keel at the keel-hull intersection in the keel position of complete extension, and being more than one maximum keel chord length aft of the keel center-of-gravity in the fully extended keel position, the second distance being more than one maximum keel chord length above the bottom surface of the boat hull, the effect of the keel pivot location being a rearward movement of the boat center-of-gravity upon the retraction of the keel, the alternate rearward and forward changes in the position of the boat center-of-gravity allowing two performances modes for the boat hull, in conjunction with the two keel positions, the performance modes being powered and sail propulsion.

4,563,972

ANCHORING ARRANGEMENT FOR FLOATING STRUCTURES

Horst Poppe, Hamburg, Fed. Rep. of Germany, assignor to Blohm & Voss AG, Hamburg, Fed. Rep. of Germany

Filed Dec. 22, 1983, Ser. No. 564,646

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247463

Int. Cl.[4] B63B *21/24*

U.S. Cl. 114—293 18 Claims

1. In an anchor cable and weight system in which at least two separate weights are interconnected by anchor cable for the purpose of securing a floating structure to an anchoring ground the improvement wherein each said weight comprises a concrete mass having an axially disposed tube therein, said tube having a plurality of retainer means therein securing said tube within said concrete mass and a spindle rotatably mounted within said tube, said spindle having eyelets at each end thereof for securing the anchor cable thereto, and wherein each said weight has a predetermined cross-sectional dimension and the anchor cable interconnecting two adjacent weights of said at least two weights, said interconnecting anchor cable having a length selected to have a pre-determined relationship with said predetermined cross-sectional dimension to avoid substantial contact, in use, between the cable and the anchor ground therebelow whereby damaging contact between said interconnecting anchor cable and the anchor ground is substantially eliminated.

4,563,973

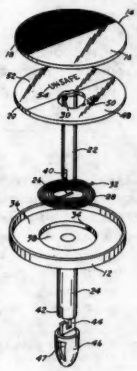
HEAT DETECTION APPARATUS

Dean P. Stull, 6225 Niwot Rd., Longmont, Colo. 80501, and Raymond E. Bennett, 4166 Culebra Ct., Boulder, Colo. 80302

Filed Jul. 12, 1984, Ser. No. 630,030

Int. Cl.[4] G01K *1/02, 1/14*

U.S. Cl. 116—218 3 Claims



1. A heat detection apparatus comprising a disc having a protruding stem extending perpendicularly from the center thereof, said stem and disc disposed in a housing in a fixed frame means and connected to a tension means in a tensioned mode in said housing, with the disc residing in a portion of said housing with said housing also having a hollow stem essentially the length of and in which resides said protruding stem and wherein the ends of the hollow stem and the protruding stem have grooves therein registered with each other, said protruding stem and disc maintained in a first position under tension by a clip disposed in said grooves and meltable at an elevated temperature, and wherein melting of said clip permits relaxation of said tension means resulting in said protruding stem and disc moving to a second position under relaxation, and further wherein said disc displays a first indicator of non-elevated temperature in the first position and a second indicator of elevated temperature in the second position.

4,563,974

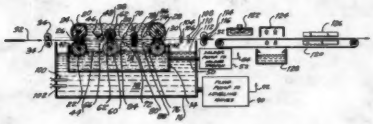
APPARATUS FOR THE APPLICATION OF SOLDER TO WORKPIECES

Robert G. Price, Bicknell, Ind., assignor to Monitrol, Inc., Vincennes, Ind.

Filed Sep. 16, 1983, Ser. No. 532,787

Int. Cl.[4] B05C *3/10*

U.S. Cl. 118—66 14 Claims



1. Soldering apparatus for applying solder to a workpiece, said apparatus comprising first means for applying solder to said workpiece, second means in operative association with said first means to provide a bath of solder assisting fluid in which to receive said workpiece and provide a medium in which the solder can be applied, conveying means for conveying said workpiece into operative relationship with said first means for the application of said solder to said workpiece, said conveying means conveying said workpiece into said bath of solder assisting fluid, and levelling means immersed in said bath of solder assisting fluid to direct at least one jet of said fluid against the workpiece while the workpiece is immersed in said bath of solder assisting fluid whereby to dislodge excess solder from the workpieces, said first means including a bath of solder upon which rests the bath of solder assisting fluid, said bath of solder being positioned to receive the thusly dislodged excess solder, said conveying means including means to convey the workpiece at least generally horizontally through said bath of solder assisting fluid, said first means further comprising soldering means to remove solder from the bath of solder and to deposit the thusly removed solder on the workpiece while the workpiece is immersed in the bath of solder assisting fluid.

4,563,975

TIRE SOAPING APPARATUS FOR TIRE MOUNTING

Chester P. Kozlowski, Royal Oak, and Thomas J. Curcuri, Grosse Pointe Woods, both of Mich., assignors to Dominion Tool & Die Co., Roseville, Mich.

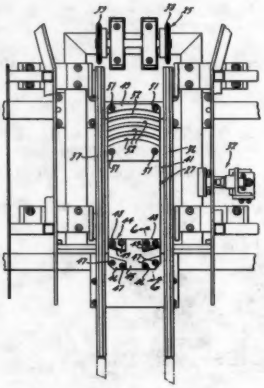
Filed Oct. 24, 1983, Ser. No. 544,857

Int. Cl.[4] B05B *13/02*

U.S. Cl. 118—320 21 Claims

1. An apparatus for performing an operation on a vehicular wheel before mounting a tire thereon comprising conveyor means for moving wheels along a fixed path through a station where the operation is to be performed, intercept means positioned in proximity to said station and movable between a free position wherein wheels may be moved by said conveyor means through said station, a stop position wherein wheels delivered to said station by said conveyor means will engage said intercept means and be stopped thereby while still on said conveyor means and a work position wherein a wheel engaged with said intercept means will be raised from said conveyor means and power means for moving said intercept means selectively between said positions, said intercept means in-

cludes means for stopping successive wheels of varying sizes in rim dimensions and radii and a plurality of support members spaced from said stop means at different distances and cooperating therewith to support said successive wheels of varying sizes whereby said apparatus may operate on said wheels of varying sizes when they are intermixed on said conveyor means.



4,563,976

DEVICE FOR MANUFACTURING LARGE-SURFACE, TAPE-SHAPED SILICON BODIES FOR SOLAR CELLS

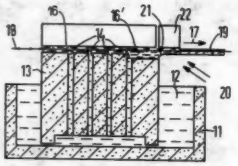
Helmut Foell, Munich; Josef Grabmaier, Berg, and Richard Falckenberg, Unterhaching, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 11, 1983, Ser. No. 512,733

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1982, 3231326

Int. Cl.[4] B05C *3/15, 11/02*

U.S. Cl. 118—401 **4 Claims**



1. In an apparatus for manufacturing large-surface, tape-shaped silicon bodies for solar cells by coating a carrier body with molten silicon, said carrier body having a mesh structure and being resistant to the silicon melt but being wettable by said melt, said apparatus having a melt vat accepting the silicon melt and guide devices for ensuring that the carrier body to be coated is continuously brought into contact with the melt, the improvement comprising:

a capillary body disposed in said melt vat having a system of parallel capillary passages extending in a vertical direction in the capillary body and terminating in a substantially horizontal top surface of said body for drawing melt from said vat to form a melt pool at said top surface; and

said guide devices comprising a horizontal guide channel communicating with said capillary passages and completely filled by said melt pool for guiding the carrier body to be coated in a horizontal direction through said melt pool.

4,563,977

ELECTROSTATIC COATING PLANT

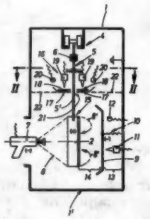
Walter Spengler, Strehlgasse 23, CH-4105 Biel-Benken, Switzerland

Filed Aug. 28, 1984, Ser. No. 645,543

Claims priority, application Switzerland, Aug. 29, 1983, 4727/83

Int. Cl.[4] B05D *1/04*

U.S. Cl. 118—623 **11 Claims**



1. An electrostatic coating plant for applying dry or wet surface coatings to articles having an electrically conducting surface, said apparatus comprising

an enclosing wall defining an enclosed treatment area,

a spraying gun for spraying electrostatically charged particles of a predetermined polarity into the treatment area,

a support device electrically insulated from said enclosing wall for supporting an article to be coated in said treatment area within the spraying range of said gun,

inductor means cooperating with said support device for charging the article which is supported thereon with an electrostatic potential of a polarity opposite that of the electrostatically charged particles from said spraying gun,

at least one electrically conducting curtain electrically insulated from said enclosing wall and positioned in said treatment area opposite said spraying gun and behind the article to be coated, and

means for charging said at least one curtain with an electrostatic potential of the same polarity as the electrostatically charged particles from said spraying gun, whereby particles which may be sprayed past the article are reflected back onto the rear side of the article.

4,563,978

DEVELOPING APPARATUS

Shunji Nakamura, Kawasaki; Fumitaka Kan, Yokohama; Hidemi Egami, Zama; Atsushi Hosoi, Tokyo; Hatsuo Tajima, Matsudo, and Kimio Nakahata, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1984, Ser. No. 594,863

Claims priority, application Japan, Apr. 8, 1983, 58-61852; Apr. 8, 1983, 58-61854; Apr. 8, 1983, 58-61855; Apr. 18, 1983, 58-68645

Int. Cl.[4] G03G *15/09*

U.S. Cl. 118—658 **20 Claims**

1. A developing apparatus wherein a thin layer of a non-magnetic developer is formed, comprising in combination:

a developer container for containing non-magnetic developer and magnetic particles;

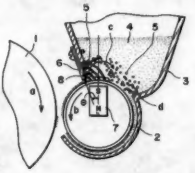
a developer carrying member movable for carrying the non-magnetic developer toward an image bearing member and then back to said developer container;

regulating means disposed adjacent to a non-magnetic developer outlet of said developer container with a clearance

with respect to a surface of the developer carrying member;

magnetic field generating means having a magnetic pole disposed across said developer carrying member from said regulating means; and

a magnetic sealing member for preventing leakage of the non-magnetic developer disposed adjacent to the return-



ing developer inlet of said developer container with a clearance with respect to a developer carrying surface of said developer carrying member, and disposed within a magnetic field of said magnetic field generating means;

wherein said regulating means and said magnetic field generating means cooperate to confine the magnetic particles within said developer container to apply the non-magnetic developer on said developer carrying member.

4,563,979

APPARATUS FOR MANUFACTURING LARGE-SURFACE, BAND-SHAPED SILICON FOR SOLAR CELLS

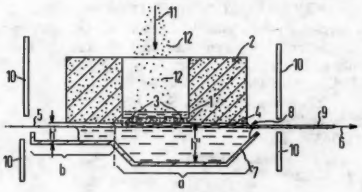
Richard Falckenberg, Wald, and Josef Grabmaier, Berg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 9, 1983, Ser. No. 560,047

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1983, 3306515

Int. Cl.[4] B05C *3/15*

U.S. Cl. 118—694 **12 Claims**



1. Apparatus for manufacturing large-surfaced, band-shaped silicon bodies for solar cells including a carrier unit having a netlike structure of graphite material which, although resistant to silicon smelt can be wetted by said smelt and is continuously layered by said smelt, said apparatus comprising:

(a) a melting pot for receiving said silicon smelt, said smelting pot being provided in its floor with vertical, and outwardly extending drain openings for feeding said smelt to the carrier unit, the floor of said melting pot is comprised of a material easily wettable by said silicon smelt;

(b) a receptacle for holding said smelt comprising a material which cannot be wetted by said silicon smelt, the receptacle containing two areas "a" and "b" of different depths, wherein the distance from its bottom to the melting pot floor of area "a" located in the vicinity of a portion of the carrier unit being layered is larger by at least a factor of two than the distance from its bottom to said melting pot floor of area "b" located in the vicinity of a portion of the carrier unit which is non-layered;

(a) a heatable canal being defined by the bottom of said melting pot and the upper surface of said smelt to be held in said receptacle, said heatable canal extending horizontally therebetween so as to guide and move the carrier unit located therein for layering with said melt.

4,563,980

MARKING DEVICE FOR USE WITH AN ANIMAL MARKING HARNESS

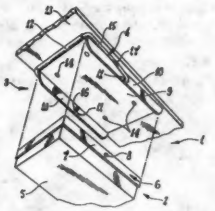
Edward Thompson, Mt. Waverley, Australia, assignor to Hortico Limited, Laverton North, Australia

Filed Aug. 3, 1983, Ser. No. 519,802

Claims priority, application Australia, Aug. 16, 1982, PF5412

Int. Cl.[4] A01K *45/00, 67/00*

U.S. Cl. 119—1 **4 Claims**



1. An animal marking device for incorporation into a harness worn by an animal, usually a male animal, comprising

a cartridge carrier having a base member attached to the harness and having a pair of longitudinally opposed upwardly extending side walls at least one of which is provided with an aperture therethrough;

a replaceable cartridge member adapted to fit on said base member between said upwardly extending side walls;

a releasable retaining means to hold said replaceable cartridge member on said base member and having at least one yieldably resilient arm connected to said base member and contacting said replaceable cartridge member through said aperture in at least one of said side walls of said base member with said resilient arm extending from said aperture below the height of said upwardly extending sidewalls;

said replaceable cartridge member having a hole on at least one side located to coincide with said aperture in said side wall when said replaceable cartridge member is in place on said base member and with said hole located to receive an end of said yieldably resilient arm extending through said aperture into said hole.

4,563,981

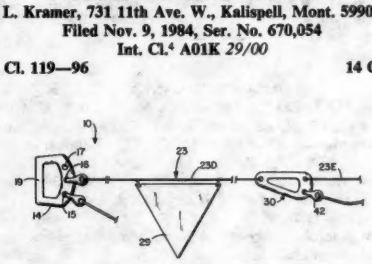
GROUP TETHER APPARATUS

Roy L. Kramer, 731 11th Ave. W., Kalispell, Mont. 59901

Filed Nov. 9, 1984, Ser. No. 670,054

Int. Cl.[4] A01K *29/00*

U.S. Cl. 119—96 **14 Claims**



1. A group tether apparatus for providing directional control to a group of individual members, comprising:

main handle means for control by a group leader;

a plurality of handle strings, each string comprised of a plurality of linearly aligned second handles adapted to be grasped by the individual group members, a plurality of intermediate line segments connecting adjacent second handles on each handle string;

first connecting means on the main handle means, each handle string having second connecting means for releasable connection to the first connecting means on the main handle means.

4,563,982

METHOD AND APPARATUS FOR INTRODUCTION OF A FLUID MEDIUM INTO WORKING SPACE OF AN INTERNAL COMBUSTION ENGINE

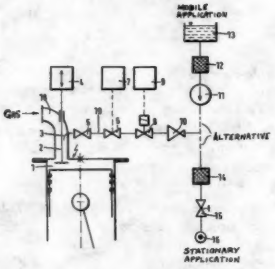
Franz Pischinger, Aachen, Fed. Rep. of Germany, and Robert Söllner, Jenbach, Austria, assignors to Forschungsgesellschaft für Energietechnik und Verbrennungsmotoren mbH, Aachen, Fed. Rep. of Germany

Filed Mar. 12, 1984, Ser. No. 588,522

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1983, 3308886; Jan. 14, 1984, 3401143

Int. Cl.[4] F02B *75/12*

U.S. Cl. 123—1 A **16 Claims**



1. A method for introduction of the fluid medium into a working combustion chamber of an internal combustion engine operated with gaseous fuels including a power gas rather than liquid fuel, comprising the steps of admixing the fluid medium to the gaseous fuel alone before combustion procedure at least intermittently whereby feeding of air supply occurs separately in the combustion chamber, then thereafter blowing-in a power-gas/fluid medium mixture combined therewith specifically during inner mixture formation in the working combustion chamber, said flowing-in occurring under the pressure of the power gas for reduction of NO_x-emission; and

providing bound OH-groups in the fluid medium being admixed to the gaseous fuel, the fluid medium being selected from a group including water, alcohol and also employing alcohol/water mixtures as the fluid medium.

4,563,983

INTERCOOLER ARRANGEMENT FOR SUPERCHARGED INTERNAL COMBUSTION ENGINE

Yoshimasa Hayashi, Kamakura, and Yoji Itoh, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 4, 1985, Ser. No. 697,924

Claims priority, application Japan, Feb. 7, 1984, 59-20498

Int. Cl.[4] F01P *3/22*; F02B *29/04*

U.S. Cl. 123—41.21 **10 Claims**

1. In a supercharged internal combustion engine having

a combustion chamber,

a compressor, and

an induction conduit leading from said compressor to said combustion chamber and through which supercharging air passes from said compressor to said combustion chamber,

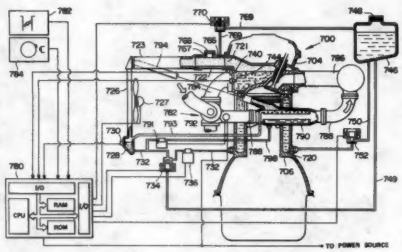
a cooling system comprising:

a first coolant jacket formed about structure of said engine subject to high heat flux;

a radiator in which coolant vapor is condensed to its liquid form;

a first vapor transfer conduit leading from said first coolant jacket to said radiator;

means for returning liquid coolant from said radiator to said first coolant jacket in a manner to maintain said structure subject to high heat flux immersed in liquid coolant and



define a vapor collection space within said first coolant jacket;

a second coolant jacket arranged with said induction conduit for cooling the air which passes through said induction conduit;

a second vapor transfer conduit leading from said second coolant jacket to said radiator; and

a first pump which pumps liquid coolant from said radiator to said second coolant jacket in response to a first parameter sensor which senses a parameter which varies with the supercharging of said engine.

4,563,984

SUCTION PIPE APPARATUS FOR AN INTERNAL-COMBUSTION ENGINE

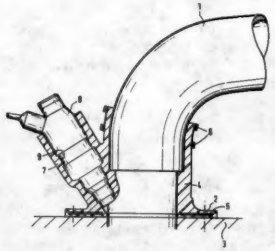
Gerhard Ziegler, Besigheim; Karl Gregotsch, Heimerdingen, and Rolf von Sivers, Rutesheim, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Weissach, Fed. Rep. of Germany

Filed Sep. 20, 1984, Ser. No. 652,513

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1983, 3333843

Int. Cl.[4] F02M *61/14*

U.S. Cl. 123—52 M **4 Claims**



1. Suction pipe apparatus for internal-combustion engine having fuel injection, especially intermittent fuel injection into an intake pipe connected to a cylinder head of the engine, comprising a one-piece structure-borne-noise insulating connecting pipe formed of a vibration attenuating material being arranged between the cylinder head and the intake pipe, said

connecting pipe having sleeve-shaped receiving means for receiving a fuel injection valve, wherein an inner surface of the sleeve-shaped receiving means conforms to and encloses a noise-reflecting surface of a nozzle end of the fuel injection valve to reduce a major portion of vibration emanating from the noise-reflecting surface.

4,563,985

CAM SHAFT DRIVE OF AN INTERNAL COMBUSTION ENGINE

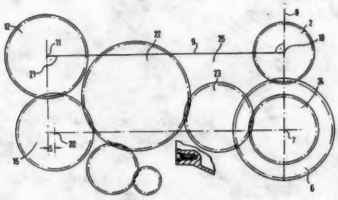
Heinz Dorsch, Weissach-Flacht, and Michael Beer, Wimsheim, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Weissach, Fed. Rep. of Germany

Filed Mar. 14, 1984, Ser. No. 589,319

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1983, 3309152; Mar. 16, 1983, 3309376

Int. Cl.[4] F01L *1/46*

U.S. Cl. 123—90.31 **11 Claims**



1. Driving gear arrangement for a cam shaft bearingly supported in the cylinder head of a combustion engine, the driving gear arrangement comprising toothed gear transmission means for connecting the engine crank shaft to the cam shaft, the transmission means including a cam shaft toothed wheel on the cam shaft, a crank shaft toothed wheel on the crank shaft, and a plurality of intermediate toothed gear wheels, the cylinder head being heated to a thermal elongation-inducing temperature during operation of the combustion engine, the intermediate gear wheels being arranged partly at the frontal side in a crank shaft housing and partly in a gear housing flangedly connected to the crank shaft housing, wherein one of the intermediate toothed gear wheels is rotatably engaged with the cam shaft toothed gear wheel to position the axial middle of the one intermediate gear along an outgoing line extended from the axial middle of the cam shaft toothed wheel in one of a collinear relation and an inclined relation to a perpendicular reference line that is perpendicular to a connection line connecting the axial middles of the crank shaft toothed gear wheel and the cam shaft toothed gear wheel to permit the axial middle of the cam shaft toothed gear wheel to move along an arcuate path about the axial middle of the one intermediate gear wheel in response to thermal elongation of the cylinder head induced by heating the cylinder head during operation of the combustion engine.

4,563,986

SPLASH LUBRICATED OVER HEAD VALVE ENGINE

Keiichi Nakano, Sakaishi, Japan, assignor to Kubota Ltd., Osaka, Japan

Filed Aug. 31, 1984, Ser. No. 646,143

Claims priority, application Japan, Sep. 9, 1983, 58-140575[U]

Int. Cl.[4] F01M *9/10*

U.S. Cl. 123—90.38 **7 Claims**

1. A splash lubricated over head valve engine comprising:

a cylinder having a cylinder head;

a rocker chamber, having a plurality of rocker arms therein, disposed on a first side of said cylinder head, said rocker chamber inclined lower toward said first side of said cylinder head;

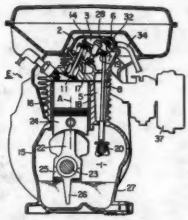
an inlet valve and an outlet valve disposed on a first side of said rocker chamber;

a crank case;

a breather chamber having an inlet means, said breather chamber connected to said rocker chamber via said inlet means, said breather chamber disposed above a second side of said rocker chamber;

a gas inducing passage having an outlet means;

an oil return passage substantially parallel to said gas inducing passage, said gas inducing passage and said oil return passage connecting said rocker chamber and said crank case;



wherein said outlet means of said gas inducing passage is opened at one side portion of an end surface on said first side of said rocker chamber; and wherein said inlet means of said breather chamber is opened at an opposite side portion of an end surface on said second side of said rocker chamber, such that blow-by gas flows along a line extended from said outlet means through said rocker chamber to said inlet means, traversing said rocker arms.

4,563,987

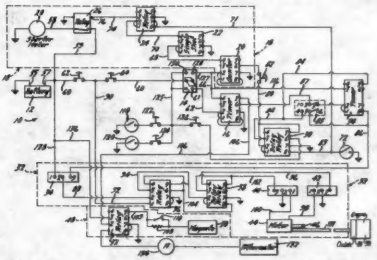
AUTOMATIC ENGINE CONTROL SYSTEM

William C. Geary; Mohammad V. Mirsaiidi, both of Broken Arrow; Timothy Redfern, and David W. Wolfe, both of Tulsa, all of Okla., assignors to Arrow Specialty Company, Tulsa, Okla.

Filed Feb. 1, 1984, Ser. No. 576,033

Int. Cl.[4] F02N *11/08*

U.S. Cl. 123—179 B **19 Claims**



1. An engine automatic control circuit for an internal combustion engine and clutch assembly, said circuit comprising:

first timer means for determining alternating first and second periods of time, such that said first period of time being when the engine is allowed to run and the clutch is allowed to be engaged and said second period of time being when the clutch is automatically disengaged;

starter means responsive to said first timer means for starting the engine near the beginning of each first period of time;

clutch actuating means responsive to said first timer means for engaging the clutch near the beginning of each first period of time after said starter means starts said engine;

shut down means responsive to said first timer means for shutting off the engine during the second period of time;

said clutch actuating means being responsive to said first timer means for disengaging the clutch at the beginning of each second period of time;

supplemental timer means for determining alternating third and fourth periods of time within said alternate second period of time such that said third period of time being when the engine is shut off and said fourth period of time being when said engine is allowed to run with said clutch remaining disengaged;

said starter means responsive to said supplemental timer means for starting the engine near the beginning of each fourth period of time; and

said shut down means responsive to said supplemental timer for shutting the engine off at the beginning of each third period of time and being deactuated during each fourth period of time and first period of time.

4,563,988

APPARATUS FOR DETERMINING THE FILLING QUANTITY OF LUBRICATING OILS IN DRIVE INSTALLATIONS

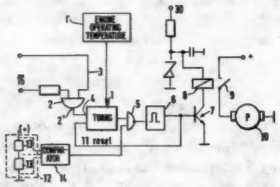
Walter Weishaupt, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke AG, Fed. Rep. of Germany

Filed Sep. 1, 1983, Ser. No. 528,635

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1982, 3232465

Int. Cl.⁴ F01M *1/00*

U.S. Cl. 123—196 S **7 Claims**



1. Apparatus for determining the fill quantity condition of lubricating oils in an internal combustion engine having an oil sump comprising

a fill level pickup comprising two sensing elements wired in series one physically located above the other in the oil sump,

a timing member activated, after a predetermined time period of several minutes following the shutoff of said internal combustion engine,

means responsive to the timing member and fill level pickup for transmitting an output signal indicative of an abnormal fill condition if the two sensing elements show differing responses, said responsive means control lubricating oil refilling device.

4,563,989

REGULATION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Cornelius Peter, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 521,477, Aug. 8, 1983, abandoned. This application Mar. 19, 1985, Ser. No. 713,108

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1982, 3238189

Int. Cl.⁴ F02D *11/10, 1/04;* F02P *5/04*

U.S. Cl. 123—339 **11 Claims**

1. A regulation system for an internal combustion engine having an air intake tube comprising,

means for generating actual values of air-flow in said intake tube,

means for generating actual and reference values of rpm,

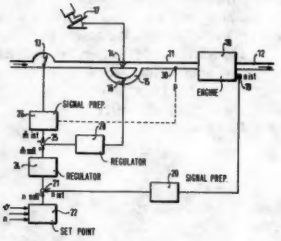
means for comparing the actual and reference values of rpm,

means for generating reference values of air-flow in said intake tube in response to said comparison means of the actual and reference values of rpm,

means for comparing the actual and reference values of air-flow in said intake tube,

means for controlling the air-flow in said air intake tube, and

means for regulating said means for controlling air-flow in said air intake tube in response to said comparison means



for the actual and reference values of air-flow in said intake tube, whereby said means for generating actual values of air-flow, said means for comparing actual and reference values of air-flow, said means for controlling air-flow, and said means for regulating said means for controlling air-flow comprise an inner control loop, and said internal combustion engine, said means for generating actual value of rpm, said means for comparing the actual and reference value of rpm, and said means for generating reference values of air-flow comprise an outer control loop.

4,563,990

FUEL SUPPLY CONTROL SYSTEM FOR ENGINE CARBURETORS

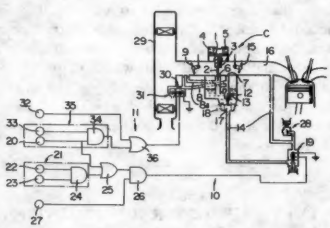
Eiji Kishida, Tokyo; Hideo Kobayashi, and Kano Hidekazu, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1983, Ser. No. 554,883

Claims priority, application Japan, Nov. 24, 1982, 82-204512

Int. Cl.⁴ F02M *7/12*

U.S. Cl. 123—438 **10 Claims**



1. In a fuel supply control system for a vehicle internal combustion engine having a variable venturi type carburetor with a fixed main nozzle and a variable nozzle in which a higher suction of intake air than a predetermined rate increases the opening area of the variable nozzle, comprising, separate first and second fuel supply increasing means connected to said main nozzle for selectively increasing the amount of fuel supplied through said main nozzle, means operative to cause said first means to increase the fuel supply within a low-speed range of vehicle operation and to cause said first and second means to

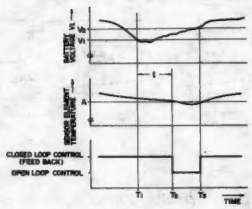
increase the fuel supply within a high-load range of engine operation.

4,563,991

ENGINE AIR/FUEL RATIO CONTROL METHOD AND SYSTEM SELECTIVELY PROVIDING FEEDBACK CONTROL OR OPEN LOOP CONTROL ACCORDING TO OXYGEN SENSOR HEATING CONDITION

Takao Akatsuka; Jiro Nakano; Takao Ishibashi, and Masao Kawaguchi, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Oct. 30, 1984, Ser. No. 666,465
Claims priority, application Japan, May 7, 1984, 59-090675
Int. Cl.[4] F02B *3/00*
U.S. Cl. 123—440 **4 Claims**



1. For an internal combustion engine comprising an exhaust system and an oxygen sensor fitted to said exhaust system comprising a sensor element and an electrically powered heater for heating said sensor element:

a method for controlling the air/fuel ratio of the air-fuel mixture supplied to said engine, wherein:

when the voltage of the power supply to said heater has dropped below a first predetermined value and thereafter has remained below a second predetermined value higher than said first predetermined value for longer than a predetermined time period, said air/fuel ratio is controlled according to engine operational parameters by an open loop form of control with no account being taken of the output signal of said oxygen sensor; while, otherwise, said air/fuel ratio is controlled according to engine operational parameters by a closed loop form of control taking into account the output signal of said oxygen sensor, so as to obtain an optimum air/fuel ratio for the engine by a feedback control process.

4,563,992

DIESEL FUEL INJECTION PUMP WITH ELECTRONICALLY CONTROLLED FUEL SPILLING AND CUTOFF AND RECIRCULATION VENTING OF SPLIT FUEL

Fumiaki Kobayashi, and Yoshiyasu Ito, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 13, 1984, Ser. No. 650,165
Claims priority, application Japan, Nov. 18, 1983, 58-178946[U]
Int. Cl.[4] F02M *41/00*
U.S. Cl. 123—458 **4 Claims**

1. A fuel injection pump for a diesel engine, the pump comprising:

(a) a housing having a bore formed therein;

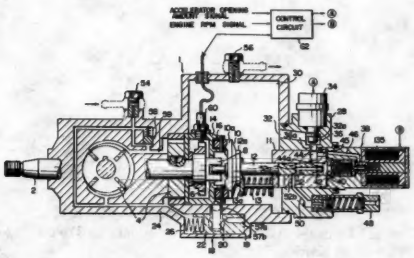
(b) a plunger slidably fitted in said bore for reciprocation with respect to the housing in response to rotation of the engine, the bore defining a high pressure chamber at one end of the plunger;

(c) a first electromagnetic valve for shutting off fuel to the pump when the engine is not running, the valve having an inlet adapted to be connected to a source of fuel at relatively low pressure and an outlet;

(d) a fuel supply passage having an upstream end connected to the outlet of the first electromagnetic valve and a downstream end leading to said high pressure chamber;

(e) means for communicating the downstream end of the fuel supply passage with said high pressure chamber substantially only when the plunger is moving in a first direction to enlarge the high pressure chamber;

(f) means for communicating the high pressure chamber with a fuel injection line substantially only when the plunger is moving in a second direction to reduce the size of the high pressure chamber;



(g) means for selectively communicating the high pressure chamber with a vent passage for controlling the amount of fuel delivered during each fuel injection, wherein the improvement comprises:

a second electromagnetic valve having an inlet connected to the high pressure chamber and an outlet connected to the fuel supply passage; and

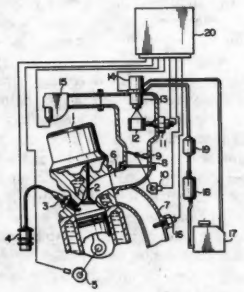
means for selectively opening the second electromagnetic valve to communicate the high pressure chamber with the fuel supply passage for at least a predetermined minimum time period in response to closing of the first electromagnetic valve.

4,563,993

FUEL FEEDING APPARATUS

Teruo Yamauchi, and Yoshishige Oyama, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 1, 1984, Ser. No. 585,195
Claims priority, application Japan, Mar. 7, 1983, 58-35970
Int. Cl.[4] F02B *3/00*
U.S. Cl. 123—478 **11 Claims**



1. A fuel feeding apparatus comprising:

(a) an intake passage feeding air to an internal combustion engine;

(b) fuel feeding means disposed midway of said intake passage;

(c) vibrating means disposed in said intake passage at a posi-

tion of impingement of fuel fed from a fuel feeding part of said fuel feeding means;

(d) vibration generating means having said vibrating means fixed thereto and converting electrical oscillation into mechanical vibration; and

(e) electrical oscillation generating means for periodically changing the frequency of said electrical oscillation at a predetermined time interval and applying the same to said vibration generating means.

4,563,994

FUEL INJECTION CONTROL APPARATUS

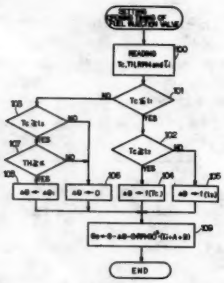
Michiaki Ujihashi, Mishima, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jul. 27, 1984, Ser. No. 635,102

Claims priority, application Japan, Aug. 9, 1983, 58-145263

Int. Cl.[4] F02D *5/02*

U.S. Cl. 123—491 **9 Claims**



1. A fuel injection control apparatus for controlling fuel injection valves which feed fuel to each cylinder of an engine for use in a vehicle, comprising:

a first sensing means for detecting an engine coolant temperature;

a second sensing means for detecting a parameter which indicates a driving condition of the engine

a first calculation means for calculating an amount of fuel to be injected into each cylinder according to an amount of the parameter detected by said second sensing means;

a second calculation means for determining an opening timing of each fuel injection valve according to the amount of the parameter detected by said second sensing means and the amount of the fuel to be injected calculated by said first calculation means;

a memorizing means for memorizing at least three zones of engine coolant temperatures;

a determining means for determining which of said at least three zones said detected engine coolant temperature falls within; and

a third calculation means for determining a compensation value, said compensation value being an amount of compensation that an opening timing of each fuel injection valve is adjusted by, according to the determining means.

4,563,995

METHOD OF AND CIRCUIT FOR ANALYZING OUTPUT SIGNALS FROM A SENSOR INSTALLED IN AN INTERNAL COMBUSTION ENGINE

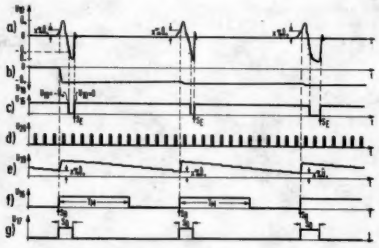
Johannes Locher, Stuttgart, and Wolfgang Schmidt, Vaihingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 7, 1983, Ser. No. 549,794

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1982, 3244940

Int. Cl.[4] F02B *3/00*

U.S. Cl. 123—494 **18 Claims**



2. A circuit arrangement for evaluating an output signal from a sensor installed in an internal combustion engine to pick up data characteristics of operational conditions of the engine comprising threshold switches connected to said data sensor, means for adjusting the threshold values of at least one of said switches, said adjusting means including at least one storage device connected to said data sensor, and means for coupling one of said threshold switches to said storage device.

4,563,996

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

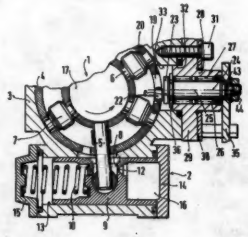
Karl Konrath, Ludwigsburg, and Otmar Weiss, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 17, 1984, Ser. No. 651,666

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1983, 3336870

Int. Cl.[4] F02M *59/20*

U.S. Cl. 123—502 **3 Claims**



1. A fuel injection pump for internal combustion engines, comprising a housing; a cam drive including at least one roller running on a circular cam track, a pump piston, said cam drive effecting a conveying stroke of said pump piston, said cam drive including one portion which is rotated by a drive of the fuel injection pump, and another stationary portion which is ring-shaped and is positioned in a circular recess in said housing; an adjustment mechanism adapted to rotate said another portion relative to said housing for changing an injection start, said another portion being formed with a recess, said adjust-

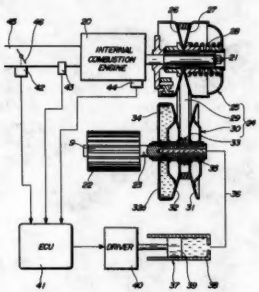
ment mechanism including an adjusting lever, a shaft positioned in said housing and connected to said lever and having an axis, and a stop engaged in the recess of said another portion and connected to said shaft, said stop being arranged eccentrically to said axis to form a lever arm, said adjustment mechanism further including an injection adjustment piston connected to said another portion of the cam drive and adjustable in dependence on the speed of the pump; said adjustment mechanism further including a sleeve having a bore, a roller bearing positioned in said bore and supporting said shaft, said housing having a wall formed with a circular recess, said sleeve having a cylindrical portion received in the circular recess of said wall, said cylindrical portion having an axis extending eccentrically with the axis of the shaft, fixing means for connecting said sleeve to the wall of said housing in a respective rotational position of the sleeve, and at least one limiting stop member which defines such a rotational position of said shaft in which said lever arm is in alignment with a circumferential direction of said another portion of said cam drive, said roller bearing being a needle bearing which has an outer ring pressed in said sleeve, said shaft forming an inner ring of said needle bearing, said sleeve having a flange formed with oblong openings, said fixing means including bolts which are guided through said oblong openings, said bolts fixing said sleeve in said housing in an adjusted rotation position.

4,563,997

CONTROL SYSTEM AND METHOD FOR COMPREX SUPERCHARGER

Hachiro Aoki, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1985, Ser. No. 693,112
Claims priority, application Japan, Feb. 1, 1984, 59-16821
Int. Cl.⁴ F02B *33/42*
U.S. Cl. 123—559 **5 Claims**



1. A control system for controlling a "comprex" supercharger for an internal combustion engine, said supercharger including a rotor formed along a whole periphery thereof with a plurality of cells extending axially of the rotor and arranged circumferentially thereof, means for introducing exhaust gas into said cells at one end of said rotor during rotation thereof, means for introducing air into said cells at another end of said rotor during rotation thereof, the air introduced into said cells being compressed by the exhaust gas introduced into said cells, and means for feeding the compressed air to said engine, said control system comprising: drive means for rotatively driving said rotor; sensor means for sensing operating conditions of said engine and for providing an output; and electronic control means responsive to said output from said sensor means for controlling said drive means to control the rotational speed of said rotor so as to achieve supercharging pressure optimum to operating conditions of said engine.

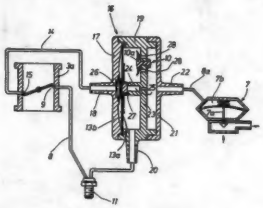
5. A control method of controlling a "comprex" supercharger for an internal combustion engine, said supercharger including a rotor formed along a whole periphery thereof with a plurality of cells extending axially of the rotor and arranged circumferentially thereof, means for introducing exhaust gas into said cells at one end of said rotor during rotation thereof, means for introducing air into said cells at another end of said rotor during rotation thereof, the air introduced into said cells being compressed by the exhaust gas introduced into said cells, and means for feeding the compressed air to said engine, said control method comprising the steps of: sensing load on said engine; sensing the rotational speed of said engine; sensing supercharging pressure of intake air being supplied to said engine; determining an optimum load line from the sensed engine load; determining an optimum value of the rotational speed of said rotor from the determined load line and the sensed engine rotational speed; determining an optimum value of the supercharging pressure corresponding to at least the sensed engine load and the sensed engine rotational speed; determining the difference between the determined optimum supercharging pressure value and the sensed supercharging pressure; correcting the determined optimum value of the rotor rotational speed by the determined difference; and controlling the rotational speed of said rotor to the corrected optimum value thereof.

4,563,998

CONTROL ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE

Hans-Karl Weining, Esslingen; Juergen Kienle, Stuttgart, and Wilfried Christl, Winterbach, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 8, 1984, Ser. No. 587,700
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1983, 3308261
Int. Cl.⁴ F02M *25/06*
U.S. Cl. 123—568 **20 Claims**



1. A method of controlling a vacuum-operated control device for an internal combusion engine comprising the steps of:
applying a vacuum to a control device, said vacuum being generated by said engine operating in a first operating condition;
retaining said vacuum throughout a range of engine operating conditions with vacuum retaining means; and
relieving said vacuum when said engine operates in a no-load idling condition by activating by-pass means for by-passing said vacuum retaining means, said by-pass means including by-pass valve means connected to an engine induction pipe by a pressure tube, said pressure tube being connected to said induction pipe at a point which is downstream of throttle butterfly means in said induction pipe.

4. Control apparatus for an internal combustion engine, comprising:
an exhaust pipe;
an induction pipe for channeling a flow of air to the engine;
throttle butterfly means located in said induction pipe for regulating said flow of air;
exhaust gas return means for channeling a flow of exhaust gas from said exhaust pipe to said induction pipe in response to a vacuum generated by the engine;

means for communicating said vacuum to said exhaust gas return means;

vacuum retaining means for retaining said vacuum supplied to said exhaust gas return means throughout a range of engine operating conditions; and

by-pass means for by-passing said vacuum retaining means, said by-pass means being capable of connecting points upstream and downstream of said vacuum retaining means when the engine is operating in a no-load idling condition, said by-pass means including by-pass valve means connected to said induction pipe by a pressure tube, said pressure tube being connected to said induction pipe at a point which is downstream of said throttle butterfly means.

4,563,999

BALL SEPARATING DEVICE FOR BALL THROWING MACHINES, ESPECIALLY FOR SQUASH BALLS OR TENNIS BALLS

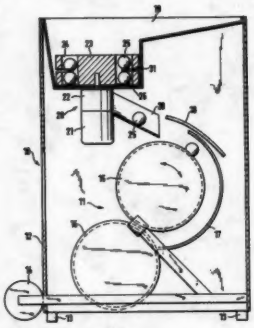
Dieter Miehlich, Holzweg 59, D-8900 Augsburg, Fed. Rep. of Germany

Filed Feb. 25, 1983, Ser. No. 469,923

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1982, 32010828; Apr. 22, 1982, 8211663[U], Aug. 12, 1982, 3230052

Int. Cl.⁴ F41B *15/00*

U.S. Cl. 124—50 **15 Claims**



1. A ball feed device for use in a ball throwing machine, especially in a machine for throwing squash balls or tennis balls, comprising a container arranged to store a supply of balls each having a predetermined diameter; a driven turntable rotatable in said container below the supply of balls therein in a substantially horizontal plane about a substantially vertical axis and having at least one substantially vertical passage of a width somewhat greater than said diameter and a length at least twice said diameter so that the passage can receive at least two superimposed balls, said passage being remote from said axis and having an open ball-receiving upper end and an open ball-dispensing lower end, said turntable further having a groove communicating with said passage at a location spaced apart from said lower end by a distance at least approximating said diameter; and a ball separating member extending into said groove and into said passage between two lowermost balls therein when said passage is in a ball feed position with an aligned separate ball discharge opening can discharge only one ball at a time.

4,564,000

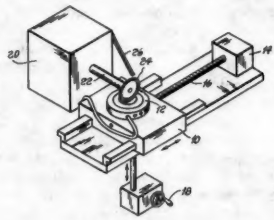
PRECISION CUTTING OF MILLIMETER WAVE FERRITE MATERIALS

Richard A. Stern, Allenwood, and Richard W. Babbitt, Fair Haven, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 6, 1984, Ser. No. 628,553

Int. Cl.⁴ B28D *1/04*

U.S. Cl. 125—13 R **7 Claims**



1. A method of precision cutting of millimeter wave ferrite material comprising:

securing said ferrite material on a platform capable of controlled lateral movement; and

moving said platform at a controlled feed rate of from 0.0254 to 0.127 cm/sec relative to a rotating transversely positioned circular saw;

said circular saw having a diameter and a spindle speed which combine to yield a cutting speed of 5400 cm/sec and having a blade fabricated of resin bonded diamond material.

4,564,001

VESSEL FOR USE WITH HIGH-FREQUENCY INDUCTION HEATER

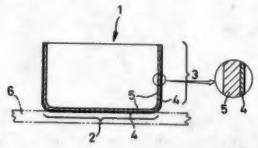
Tsuneo Maeda, Toyonaka, Japan, assignor to The Nippon Aluminium Mfg. Co., Ltd., Osaka and The Nippon Alumi Tsurmuraru Corp. Co., Mikunihon, both of, Japan

Filed Jun. 18, 1984, Ser. No. 621,788

Claims priority, application Japan, Jun. 20, 1983, 58-95614[U]

Int. Cl.⁴ A47J *27/00*

U.S. Cl. 126—390 **12 Claims**



1. A vessel having a bottom wall adapted to be heated through high-frequency induction heating for heating fluid contents contained in the vessel, the improvement comprising:

at least said bottom wall being made from a cladding which consists of an aluminum alloy layer having a thickness of 0.5–3.0 mm and a stainless steel layer having a thickness of 0.1–0.5 mm clad with each other under pressure, said aluminum alloy layer being disposed on the inner side of the vessel;

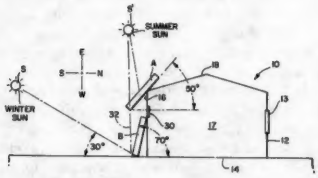
said aluminum alloy layer consisting of not more than 0.30 wt% Si, not more than 0.7 wt% of iron, not more than 0.25 wt% of copper, 1.0–1.5 wt% of iron, not more than 0.25 wt% of copper, 1.0–1.5 wt% of manganese, 0.8–1.3 wt% of magnesium, not more than 0.25 wt% of zinc, and the balance being aluminum.

4,564,002

SOLAR ENERGY COLLECTING SYSTEM

Lawrence H. Taylor, Box 49-58, 48 P.O. Branch, Union City, N.J. 07087

Filed Aug. 27, 1984, Ser. No. 644,455
Int. Cl.[4] F24J *2/00*
U.S. Cl. 126—417 5 Claims



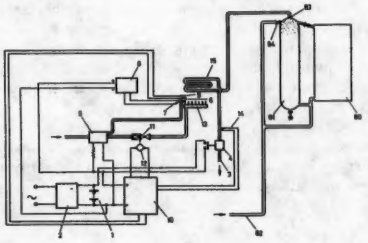
1. Solar energy collecting system employing a multiplicity of specially positioned collector panels for a south facing wall and roof of a building structure comprising first and second solar panels, said first and second panel being connected to each other for fluid flow therethrough to form part of said system; each of the first and second solar panels being rectangular and having top, bottom and side edges; means mounting the first solar panel with the bottom edge paralleling the ground line of the south facing wall with the major axis of the panel extending east and west; the minor axis of said first panel being positioned at an angle of from about 60° to about 80° to the horizontal; said second solar panel mounted above said first solar panel with the bottom edge thereof spaced above the top edge of the said first solar panel; the major axis of said second solar panel extending east and west and the minor axis positioned at an angle of from about 40° to about 60° to the horizontal; whereby said first and second solar panels receive maximum effective winter sunlight and in summer said panels intercept substantially less solar rays; said solar energy collecting system further characterized in that the upper second solar panel projects outwardly of said first solar panel to thereby shade said first solar panel at high summer angles of the sun.

4,564,003

SOLAR/GAS HEATER

Walter Iwanicki, and Brian Duane, both of Adelaide, Australia, assignors to The Commonwealth of Australia, Canberra, Australia

PCT No. PCT/AU81/00037, § 371 Date Nov. 25, 1981, § 102(e) Date Nov. 25, 1981, PCT Pub. No. WO81/02774, PCT Pub. Date Oct. 1, 1981
Continuation of Ser. No. 328,597, Nov. 25, 1981, abandoned.
This PCT application Mar. 26, 1981, Ser. No. 633,067
Claims priority, application Australia, Mar. 26, 1980, PE2925
Int. Cl.[4] F24J *3/02*
U.S. Cl. 126—427 4 Claims



1. A domestic hot water system comprising in combination an instantaneous gas water heater, a solar water heater, and a hot water storage reservoir, said solar water heater being connected to the hot water storage reservoir to heat the water therein, said instantaneous gas hot water heater comprising a heating tube assembly connected to said hot water storage reservoir to receive water therefrom, a gas burner for supplying heat to said heating tube assembly, and an outlet from said heating tube assembly for delivering heater water to a consumer, said gas burner including a pilot burner and ignition means for said pilot burner, and control means to control the instantaneous gas hot water heater, said control means including a flow switch sensing water flow in said outlet, a temperature sensing device sensing the temperature of water flowing in said outlet, a main gas valve and a gas control valve, said flow switch controlling said main gas valve, said temperature sensing device being connected to said gas control valve to control the gas flow, said temperature sensing device being connected to a motor control unit controlling an electric motor operating the gas control valve, the motor control unit delivering electrical pulses to drive the electric motor with a pulsing movement to actuate the gas control valve, said pulses actuating said gas control valve in a stepwise movement, the motor control unit having a dead zone between upper and lower limits, said upper and lower limits being determined by the upper and lower limits of the temperature of water flowing in said outlet, whereby when said temperature sensed by said temperature sensing device is below the lower limit of said dead zone said motor is pulsed to supply gas to said pilot burner and the ignition means ignites said pilot burner which ignites said burner which burns at full capacity, and when said temperature reaches said dead zone said motor is no longer pulsed, and when said temperature exceeds the upper limit of said dead zone, the motor is pulsed to terminate said gas flow to said burner and said pilot burner.

4,564,004

HYDROLYZED CASSAVA STARCH FLOCCULANTS

Raymond N. Yong, Beaconsfield, and Amar J. Sethi, Baie D'Urfe, both of Canada, assignors to Suncor, Inc., Toronto, Canada

Division of Ser. No. 562,355, Dec. 16, 1983, Pat. No. 4,502,961.
This application Nov. 19, 1984, Ser. No. 672,514
Int. Cl.[4] C08B *30/12*
U.S. Cl. 127—33 3 Claims

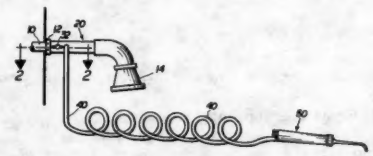
1. A composition comprising a hydrolyzed cassava starch obtained by the aqueous hydrolysis of cassava starch in the presence of about 10 to about 30 gms per 100 gms of starch of insoluble metal salts formed in situ, and wherein the salts employed during the hydrolysis to form said insoluble salts are the soluble salts of metals selected from the group consisting of sodium, potassium, ammonium, magnesium, calcium, and aluminum, and the respective anions of said soluble salts are selected from the group consisting of sulfates, acetates, chlorides, nitrates, chlorates, bromides, iodides, thicoyanates, and phosphates.

4,564,005

ORAL IRRIGATING DEVICE

Paul A. Marchand, 1171 71st St., Miami Beach, Fla. 33141, and Noel W. Abramson, 830 W. 32 St., Hialeah, Fla. 33012

Filed Dec. 5, 1983, Ser. No. 558,039
Int. Cl.[4] A61M *3/00*
U.S. Cl. 128—66 11 Claims



1. An oral irrigating assembly of the type primarily designed

for use with a substantially conventional water outlet, the assembly comprising:

(a) conduit means secured to a conventional water supply and structured for delivery of water therefrom,

(b) said water conduit means comprising a hollow interior portion including a first channel means extending along at least a portion of the length thereof and disposed for water delivery from the water supply to a delivery portion of said conduit means,

(c) a second channel means formed within said hollow interior portion and structured and disposed for water delivery from the water supply to an exterior of said conduit means, said second channel means structured to define diverse paths of liquid flow therethrough,

(d) water pulsing means movably mounted within said hollow interior portion in interruptive relation to said diverse paths of liquid flow,

(e) said diverse paths of liquid flow comprising a first channel segment and a second channel segment at least partially disposed in spaced relation to one another and each structured to define a path of liquid flow from the water supply to said water pulsing means,

(f) said second channel segment disposed to direct liquid flow into driving engagement with said water pulsing means, causing its rotation, said first channel segment disposed to direct water flow into flow regulating engagement with said water pulsing means,

(g) said water pulsing means disposed in interruptive relation to liquid flow from said first channel segment and structured to alternately stop and pass said liquid flow beyond said water pulsing means,

(h) said first and said second channel segments and said water pulsing means cooperatively disposed and structured to cause a pulsed liquid flow from said first channel segment concurrently to driving rotation of said water pulsing means by liquid flow from said second channel segment.

4,564,006

RECLOSABLE CONDOM

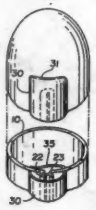
Mark L. Pomeranz, 9760 Viceroy Dr. East, Jacksonville, Fla. 32217

Continuation of Ser. No. 490,450, May 2, 1983, Pat. No. 4,498,466, which is a continuation-in-part of Ser. No. 388,107, Jun. 15, 1982, Pat. No. 4,432,357. This application Jul. 25, 1984, Ser. No. 634,442

The portion of the term of this patent subsequent to Feb. 12, 2002, has been disclaimed.

Int. Cl.[4] A61F *5/00*

U.S. Cl. 128—79 **14 Claims**



1. A condom comprising:

an elongated generally tubular member of thin, flexible material;

an elongated opening provided along at least a substantial portion of the length of said elongated tubular member so as to facilitate placing said elongated tubular member over a flaccid penis;

said elongated tubular member having an open base end and a closed, continuous, substantially smooth head end portion at the end thereof opposite said open end, said closed head end portion being adapted to cover a head portion of a penis and to contain ejaculated spermatozoa;

said elongated opening having opposed edges and extending from said open base end along the length of said elongated tubular member, except for said closed head end portion of said elongated tubular member; and

means for closing said elongated opening after placing of said condom on a flaccid penis, said closing means comprising a first elongated member on one of said edges of said elongated opening and defining an elongated groove-like receptacle which is substantially coextensive with said elongated opening, and a second elongated member extending along the other of said edges of said elongated opening and having an elongated projection thereon which is substantially coextensive with said elongated groove-like receptacle and which is lockingly and sealingly engageable in said groove-like receptacle to close said elongated opening along the complete length of the condom portion which extends along the penis after said condom is placed over a penis to provide a liquid tight closing of said elongated opening, said closing means presenting substantially smooth inner and outer surfaces along its length when in its liquid tight closed position.

4,564,007

ORTHOPAEDIC EXTERNAL FIXATION DEVICES

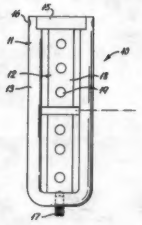
Richard R. H. Coombs, Kingston, and Mekki M. El-Saba, North Cheam, both of England, assignors to National Research Development Corp., London, England

Filed Oct. 20, 1983, Ser. No. 543,969

Claims priority, application United Kingdom, Oct. 20, 1982, 8229994

Int. Cl.[4] A61F *5/04*

U.S. Cl. 128—92 A **9 Claims**



1. An orthopaedic external fixation device comprising:

a main support structure having a plurality of like threaded bores therethrough and a plurality of similar bone pins,

each said pin having spaced leading and trailing threaded portions of the same hand and pitch, but with the latter portion being of larger diameter and threadably engageable with any one of said bores,

said main support structure comprising an elongate apertured frame, two slide members movably mounted in mutual end-to-end relation within said frame, and means for urging said slide members towards interengagement,

said bores being formed in said slide members in an array disposed generally longitudinally of said frame, and p0 said bores each being directed generally orthogonally of said frame and slide members.

4,564,008

ARM SUPPORT APPARATUS

Lloyd E. Donahoo, 7386 Pomona Way, La Mesa, Calif. 92041

Filed Jun. 15, 1984, Ser. No. 620,958

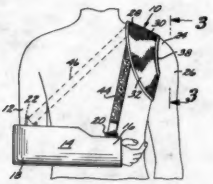
Int. Cl.[4] A61F *5/40*

U.S. Cl. 128—94 **8 Claims**

1. Arm support apparatus comprising:

a single annular band defining a shoulder anchorage adapted to pass under the wearer's unaffected arm and over the adjacent shoulder;

a single front strap attached to the inner margin of the front portion of said band and adapted to be attached to the wrist portion of a unitary arm support extending from the



wrist to the elbow of the opposite affected arm of the wearer; and

a single rear strap attached to the inner margin of the upper rear portion of said band and be attached to the elbow portion of the arm support for the affected arm of the wearer whereby the weight of the wearer's affected arm may be borne by the shoulder rather than the neck.

4,564,009

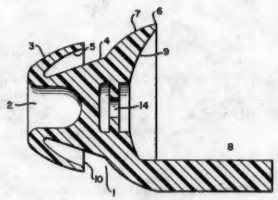
UNIVERSAL EAR PLUG

Carl H. Brinkhoff, Pittsburgh, Pa., assignor to Mine Safety Appliances Company, Philadelphia, Pa.

Filed Aug. 24, 1983, Ser. No. 525,988

Int. Cl.[4] A61F *11/02*

U.S. Cl. 128—152 **2 Claims**



1. An integral molded ear plug comprising:

a frustum-shaped, non-deformable in use, semirigid main body which increases in diameter from its tip end to its back end and having an axial cavity in the tip end;

a flexible front flange of circular cross section extending outwardly from the tip end and rearwardly over a portion of the distance of the main body and terminating in a rim spaced from the back end, and having a diameter that is greater than the major diameter of the main body;

a second, cup-shaped, semi-spherical flange extending radially outwardly from the back end and rearwardly of the main body and terminating in a rim, and having a diameter greater than the diameter of the front flange; and

an extraction tab extending rearwardly from the rim of the second flange.

4,564,010

PRESSURE SENSITIVE ADHESIVE FILM FOR MEDICAL USE

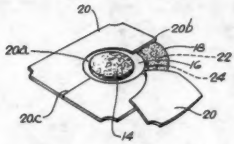
Raymond T. Coughlan, Darien, and Terrence J. Anderson, Chicago, both of Ill., assignors to Daubert Coated Products Inc., Chicago, Ill.

Filed Apr. 18, 1984, Ser. No. 601,708

Int. Cl.[4] A61L *15/00;* **B32B** *7/10*

U.S. Cl. 128—156 **11 Claims**

1. A pressure sensitive adhesive film for securing a medical device on human skin, comprising: a base layer in the form of a laminate, one layer of which is formed of a polyolefin and another layer of which is formed of a mixture of a polyolefin and an ethylene-vinyl ester copolymer; and a layer of a water base coated pressure sensitive adhesive on the surface of the layer of said laminate which is formed of said copolymer, said water base coated pressure sensitive adhesive layer consisting essentially of a mixture of a water-insoluble polyacylic latex



and a water-insoluble ester resin, and being characterized in that it is water and perspiration resistant and inert with respect to drugs or medicaments with which it may come into contact with while securing a medical device on human skin, and further being characterized in that it is non-irritating to the human skin.

4,564,011

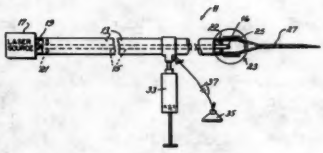
LASER OPTIC DEVICE AND METHOD

Leon Goldman, 2324 Madison Rd., #1807, Cincinnati, Ohio 45208

Continuation-in-part of Ser. No. 360,244, Mar. 22, 1982, abandoned. This application Oct. 6, 1983, Ser. No. 539,160

Int. Cl.[4] A61B *17/36*

U.S. Cl. 128—303.1 **7 Claims**



1. A laser optic device for the treatment of a blood vessel, comprising:

a source of laser energy;

a catheter communicating at one end with said source of laser energy;

at least one optic fiber disposed within and protected by said catheter, said optic fiber being adapted to transmit said laser energy;

a probe including a hub mounted to the other end of said catheter, and a hollow needle connected to said hub for receiving said laser energy, said needle being insertable within or adjacent to said blood vessel and being adapted to transmit said laser energy thereto;

means for applying pressure to said blood vessel at a location spaced from the point of insertion of said needle in the direction of blood flow in said blood vessel; and

rinsing means disposed along said catheter for rinsing said needle.

5. A method of creating a blood clot within a blood vessel comprising the steps of:

inserting a probe within said blood vessel, said probe being operable to transmit laser energy produced by a laser energy source into said blood vessel;

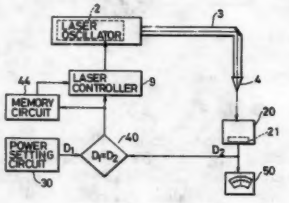
applying pressure to said blood vessel at a location spaced from the point of insertion of said probe in the direction of the flow of blood within said blood vessel; and

activating said laser energy source, said laser energy being transmitted through said probe and entering the interior of said blood vessel causing a blood clot to form therewithin.

4,564,012
LASER SURGICAL EQUIPMENT

Tamotsu Shimada, Akishima; Chiaki Shinbo, Mitaka; Hideyuki Horiuchi, Kokubunji, and Masamoto Takatsuji, Setagaya, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,402
Claims priority, application Japan, Sep. 28, 1981, 56-152083; Sep. 28, 1981, 56-152084
Int. Cl.⁴ A61N *5/06*
U.S. Cl. 128—303.1 **15 Claims**



1. A laser surgical equipment comprising:
a laser oscillator for oscillating a laser output;
control means for controlling the laser output of said laser oscillator;
an optical waveguide connected to said laser oscillator and transmitting the laser output;
a hand piece connected to said optical waveguide and radiating the laser output to a diseased part to be radiated;
first detection means for detecting the laser output from said hand piece;
setting means for setting a desired laser output from said hand piece;
comparison means for comparing the output of said first detection means with an output of said setting means and for controlling said control means; and
memory means for storing the output of said comparison means, said memory means providing an output to said control means controlling the laser output of said laser oscillator during the period other than the period in which said first detection means detects the laser output.

4,564,013
SURGICAL FILAMENTS FROM VINYLIDENE FLUORIDE COPOLYMERS

Robert Lilenfeld, Flemington; Nicholas M. Popadiuk, Raritan; Peter Steinheuser, Manville, and Edgar Menezes, Somerville, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed May 24, 1984, Ser. No. 613,558
Int. Cl.⁴ C08F *14/22*
U.S. Cl. 128—335.5 **9 Claims**

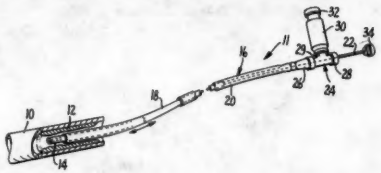
1. A drawn and oriented surgical filament comprising a copolymer of vinylidene fluoride and hexafluoropropylene, wherein said copolymer contains from about 1 to about 15 weight percent polymerized hexafluoropropylene, the remainder being polymerized vinylidene chloride.

4,564,014
VARIABLE LENGTH DILATATION CATHETER APPARATUS AND METHOD

Thomas J. Fogarty, 770 Welch Rd., Palo Alto, Calif. 94304, and Albert K. Chin, San Francisco, Calif., assignors to Thomas J. Fogarty, Palo Alto, Calif.

Filed Jan. 30, 1980, Ser. No. 116,923
Int. Cl.⁴ A61M *29/02*
U.S. Cl. 128—344 **16 Claims**

1. A catheter for dilating a partially occluded blood vessel, said catheter comprising: an elongate inflatable elastomeric tube extending substantially the full length of the catheter and proportioned for extension through the vessel; means to inflate the tube; a primary non-inflatable sheath telescopically positioned around the tube in closely fitting relationship thereto confining a predetermined portion of the inflatable length of the tube against inflation, said sheath being proportioned for

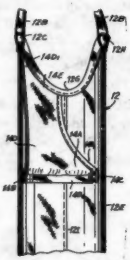


extension through the vessel with the tube and being longitudinally movable relative to the tube to selectively expose varying distal portion lengths of the tube for inflation.

4,564,015
GARMENT WITH BUILT-IN INTERIOR SUPPORT STRUCTURE

Allen Friedman, 429 E. 52nd St., New York, N.Y. 10022

Filed Mar. 22, 1984, Ser. No. 592,110
Int. Cl.⁴ A41C *3/08*
U.S. Cl. 128—455 **5 Claims**



1. An article of lightweight women's wearing apparel to furnish support for the bust of the wearer, comprising a main body portion adapted to be worn on the upper torso of the wearer and including a front neckline, a rear neckline, a pair of shoulder portions at the opposite ends of said front and rear necklines, and a pair of armholes under said shoulder portions and having lower arcs, said main body portion being composed of front and rear pieces of sustantially equal areas joined along vertical seams at diametrically opposed sides thereof, an inner garment member located within said main body portion and having a front section adapted to cover and extend below the wearer's bust, a lower section encircling the wearer's torso just below the region of the bust, and a releasably engageable section, including rear adjustment means, defining the lower terminal periphery of said inner garment member, said inner garment member being attached to said main body portion transversely of the same along the length of said front neckline and rearwardly along the lower arc of each of said armholes up to the locations of said vertical seams, respectively, and including a pair of opposed side panels having upper and lower borders and extending rearwardly of the respective vertical seams and terminating at said rear adjustment means to provide side and uplifting support to the bust of the wearer.

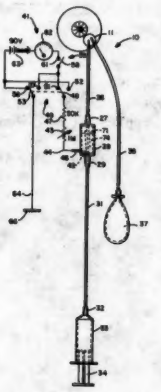
4,564,016
APPARATUS FOR INTRODUCING IONIZED DRUGS INTO THE POSTERIOR SEGMENT OF THE EYE AND METHOD

David M. Maurice, Atherton, Calif., and Darrell Brooks, Lathrop, Mo., assignors to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Continuation of Ser. No. 381,151, May 24, 1982, abandoned. This application Aug. 13, 1984, Ser. No. 639,806
Int. Cl.⁴ A61B *10/00*
U.S. Cl. 128—645 **11 Claims**

1. In an apparatus for introducing an ionized drug into the

eye, a cup-shaped member formed of an insulating material and having an outwardly extending annular lip adapted to be placed in contact with the exterior scleral surface of the eye, said member having a nipple formed integral therewith disposed within the confines of the annular lip and having its outer extremity lying generally in the same plane as the plane of the annular lip, said annular lip and said nipple being adapted to come in contact with the eye and to form a liquid-tight seal therewith, said member having a passageway therein extending through the nipple with a cross-sectional area of less



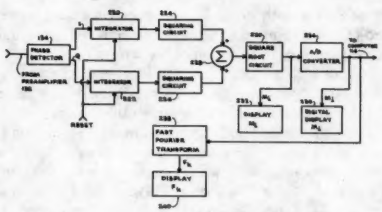
than approximately one millimeter in diameter, an ionized drug solution filling said passageway and electrical power supply means remote from the member and coupled to said passageway for causing a current flow of at least 50 milliamperes per square centimeter through the drug solution to establish a high current density in the eye in the vicinity of the portion of the eye in contact with the ionized drug solution in said passageway whereby the drug is carried from the passageway into the eye.

4,564,017

METHOD AND APPARATUS FOR RESPIRATION MONITORING WITH AN NMR SCANNER

Gary H. Glover, Waukesha, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Nov. 21, 1984, Ser. No. 673,688
Int. Cl.[4] A61B *5/05*
U.S. Cl. 128—653 **12 Claims**



1. A method of determining the respiration period of a patient using scan data obtained with an NMR scanner, said method comprising the steps of:

acquiring amplitude-modulated NMR scan data of a predetermined region of the patient; and

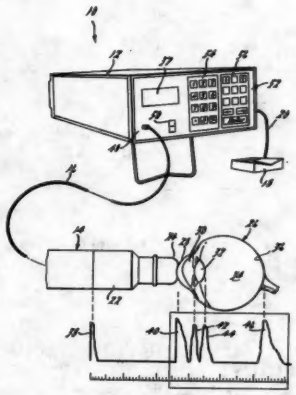
analyzing said scan data to derive the respiration rate of the patient.

4,564,018

ULTRASONIC SYSTEM FOR OBTAINING OCULAR MEASUREMENTS

Stephen Hutchison, Kirkwood; J. Alan Ritter, Des Peres, and Mark Virkus, Ellisville, all of Mo., assignors to Storz Instrument Company, St. Louis, Mo.

Filed Oct. 28, 1982, Ser. No. 437,487
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660 **24 Claims**



1. An ultrasonic diagnostic scanner for measuring at least one parameter of an eye, comprising:

transmitter means for causing a transducer to transmit an ultrasonic signal;

receiver means for receiving echo signals representing reflections of said transmitted ultrasonic signal and for producing a peak signal only at substantially the maximum amplitude of said echo signals when said echo signals exceed a predetermined threshold level which is below said maximum amplitude;

programmable means responsive to said peak signals for producing a first count signal indicative of the time between the transmission of said ultrasonic signal and the occurrence of a selectable number of peak signals and for producing a second count signal indicative of the time between the occurrence of predetermined peak signals;

microcomputer means for controlling said transmitter means and said programmable means, said microcomputer means determining said selectable number and said predetermined peak signals, and for determining said eye parameter from at least one of count signals; and

output means responsive to said microcomputer means for generating a perceptible output indicative of said eye parameter.

4,564,019

METHOD FOR MEASURING CHARACTERISTICS OF LIVING TISSUES BY ULTRASONIC WAVES

Hirohide Miwa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 30, 1983, Ser. No. 480,589
Claims priority, application Japan, Apr. 7, 1982, 57-57573
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660 **16 Claims**

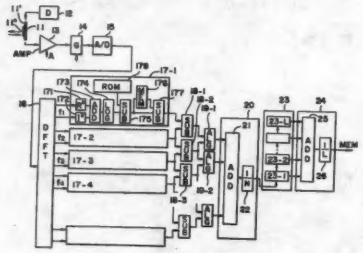
1. A method for measuring the internal characteristics of a body, comprising:

transmitting pulses of ultrasound pressure waves into said body, each said pulse comprising ultrasound pressure waves of at least three frequencies;

selectively receiving as different respective return signals

the corresponding ultrasound pressure waves reflected from different ranges of depths in said body;

determining values corresponding to the relative energy of respective frequency components in each said return signal corresponding to said at least three frequencies; and



processing said values to determine information on spatial variation of the reflection coefficient at different depths in said body.

4,564,020

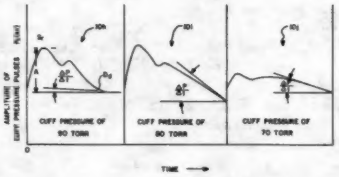
METHOD AND APPARATUS FOR OBTAINING AN INDIVIDUAL'S SYSTOLIC BLOOD PRESSURE

William T. Link, Berkeley, Calif., assignor to Norse Instruments, Inc., Hayward, Calif.

Filed Jun. 19, 1984, Ser. No. 622,079

Int. Cl.[4] A61B *5/02*

U.S. Cl. 128—677 **8 Claims**



1. A method of determining the systolic pressure of a given mammal, comprising the steps of:

(a) determining the diastolic pressure of said mammal;

(b) establishing an arterial curve characteristic of said mammal in a way which does not require the systolic pressure;

(c) placing a blood pressure cuff around a particular artery of said mammal;

(d) pressurizing the cuff at a number of different pressure levels from zero pressure to a pressure at least equal to the mammal's systolic pressure and generating cuff pulses having peak to peak amplitude values corresponding to and dependent on said different pressure levels;

(e) graphically providing a reference curve of said peak to peak amplitude values against said pressure levels;

(f) using said arterial curve, said diastolic pressure and an assumed systolic pressure, obtaining peak to peak amplitude values at different cuff pressures from this information and graphically providing a comparison curve of these latter peak to peak amplitude values against said different cuff pressures;

(g) comparing said reference curve with said comparison curve, whereby if they are similar, then the assumed systolic pressure is approximately equal to the given mammal's actual systolic pressure; and

(h) repeating steps (f) and (g) for one or more different assumed systolic pressures if said first-mentioned comparison curve is different than said reference curve until a comparison curve is established which corresponds to said reference curve.

4,564,021

MOUTHPIECE FOR A BREATH-ALCOHOL MEASURING DEVICE

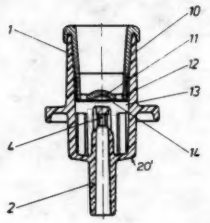
Klaus Siegmann, Lubeck, and Martin Schmidt, Bad Schwartau, both of Fed. Rep. of Germany, assignors to Dragerwerk AG, Fed. Rep. of Germany

Continuation of Ser. No. 522,662, Aug. 12, 1983, abandoned. This application Jan. 18, 1985, Ser. No. 692,726

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1982, 3233462

Int. Cl.[4] A61M *16/00*; A61B *10/00*

U.S. Cl. 128—716 **3 Claims**



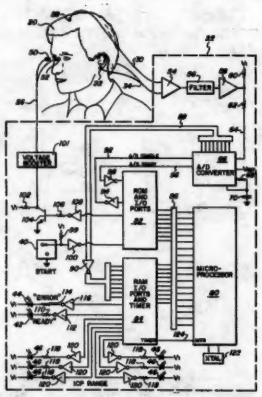
1. A mouthpiece for a breath-alcohol measuring device, comprising: a hollow cylindrical mouth portion (1) having an open tubular mouth engaging end (*1a*) and an opposite partly closed end (*1b*); a central hollow tubular connecting portion (2) having an open outer end (*2a*) and an opposite inner closed top end (6), said connecting portion closed top end being connected to and extending through said partly closed end (*1b*) of said mouth portion, into an interior of said mouth portion and having a lateral inlet opening (7) on its side adjacent said inner closed top end, which inlet opening opens into the interior of said mouth portion (1) and communicates the hollow cylindrical mouth portion with the inlet opening of said connecting portion for the flow of breathing gas through said connecting portion from the open outer end thereof; said mouth portion having a diameter and wall thickness suitable for taking the mouth portion into a person's mouth and including an exterior flange (8) projecting radially outwardly from an exterior of said mouth portion at a spaced location from its open end (*1a*) and being of a size wider than the person's mouth to limit the length of penetration of the mouth portion into the person's mouth up to the flange; said mouth portion, said flange and said connecting portion being made of one piece of plastic material; a tubular insert member (10) engaged into said mouth portion open end and having an inner end portion (11) overlying and spaced from said closed top end (6) of said connecting portion (2) with an off-center opening (12) therethrough; and an elastic valve plate (14) disposed in the space between said inner end portion (11) and said closed top end (6) and being free to move between the closed top end of said connecting portion and said insert member and being bendable against said closed top end (6) during blowing into said mouth portion to permit the breathing gas to flow around said plate and into the lateral inlet opening (7) of said connecting portion and being movable against said inner end portion (11) of said insert member during inhaling to close the off-center opening of said insert member inner end portion.

4,564,022

METHOD AND APPARATUS FOR INTRACRANIAL PRESSURE ESTIMATION

John G. Rosenfeld, 518A Sooner, Norman, Okla. 73069; Clark Watts, Rte. 4, Box 61, and Donald H. York, 3714 Berrywood, both of Columbia, Mo. 65201

Filed Mar. 12, 1982, Ser. No. 357,482
Int. Cl.[4] A61B 5/00
U.S. Cl. 128—748 23 Claims



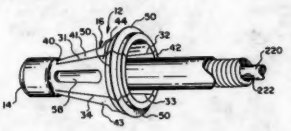
1. A method for estimating intracranial pressure comprising the steps of:
(a) generating at least one evoked potential;
(b) measuring the value of the latency of a peak of said evoked potential; and
(c) comparing the value of said latency with known latency/intracranial pressure correlations to determine an estimated intracranial pressure.

4,564,023

RETENTION SKIRT FOR PACING ELECTRODE ASSEMBLY

Stanley R. Hess, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Mar. 28, 1983, Ser. No. 479,854
Int. Cl.[4] A61N 1/04
U.S. Cl. 128—785 26 Claims



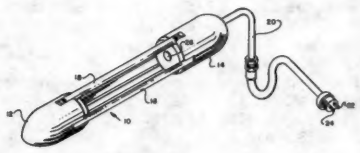
1. An electrode assembly, mounted at the distal end of a pacing lead comprising lead body and at least one electrical wire conductor in the lead body, at least a tip electrode including a tip and means for connecting said tip to the wire conductor, and a skirt coupled to the lead body adjacent said tip and extending around and outwardly of said lead body, extending rearwardly from said tip and having in the rearward portion of said skirt, at least two slits for separating said skirt into at least two adjacent, but physically separated sections, said slits extending radially through said skirt and axially forwardly from a rear edge of said skirt toward but not to a forward edge of said skirt, said skirt being made of a flexible material and yet being capable of engaging trabeculae in a heart chamber for maintaining said electrode assembly in a desired position in a heart chamber, said adjacent, but physically separated skirt sections facilitating folding over of said skirt to allow said electrode assembly to be removed when desired by the application of sufficient tension to the pacing lead to cause said adjacent, but physically separated skirt sections to fold back over themselves independent from each other as the pacing lead is withdrawn and said adjacent, but physically separated skirt sections, when in an open space, being capable of returning to their original position independent of each other.

4,564,024

ELECTRO-EJACULATOR PROBE

Wilson H. Wohler, Jr., 1202 N. Bell St., San Angelo, Tex. 76905

Filed Jul. 2, 1984, Ser. No. 628,201
Int. Cl.[4] A61N 1/18
U.S. Cl. 128—788 3 Claims



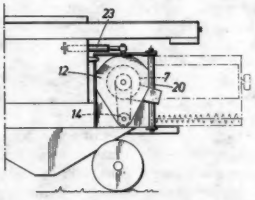
1. In an electro-ejaculator probe having
a. a cylindrical profile about an elongated axis,
b. a front and back,
c. a bullet-shaped nose at the front,
d. a rounded structure at the back,
e. the front and back having outer surfaces along the cylindrical profile,
f. a plurality of elongated electrodes
(i) along the cylindrical profile,
(ii) parallel to the axis, and
(iii) structurally attached to the front and back,
g. a handle attached to the back, and
h. electrical wires connected to the electrodes extending through the handle;
i. wherein the improved structure comprises:
j. a fecal pocket within the cylindrical profile between the front and back,
k. said pocket opening to outside the profile between adjacent electrodes.

4,564,025

SELF-PROPELLED HARVESTER THRESHER

Johannes Dammann, Harsewinkel, Fed. Rep. of Germany, assignor to Claas OHG, Harsewinkel, Fed. Rep. of Germany

Filed Mar. 5, 1984, Ser. No. 586,091
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1983, 3307633
Int. Cl.[4] A01F 7/00
U.S. Cl. 130—27 R 12 Claims



1. A self-propelled harvester thresher, comprising a housing;

at least two non-removable axial threshing and separating devices arranged in said housing and each including a rotatable threshing drum and a casing surrounding the latter with a small distance therebetween and provided with a product supply opening and a product discharge opening, said axial threshing and separating devices being non-removably movable between two positions including a working position in which said axial threshing and separating devices extend transverse to a longitudinal axis of the harvester thresher, and a transporting position in whcih said axial threshing and separating devices extend along the longitudinal axis of the harvester thresher so that they do not exceed a permissible street width.

4,564,026

METHOD OF AND APPARATUS FOR BUILDING A TOBACCO STREAM

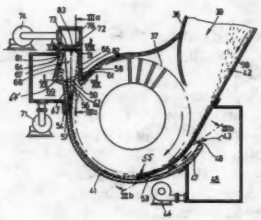
Günter Wahle, Reinbek; Dieter Ludszeweit, and Uwe Heitmann, both of Hamburg, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Dec. 2, 1983, Ser. No. 557,735

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1982, 3244532

Int. Cl.⁴ A24C *5/18, 5/39*

U.S. Cl. 131—84.3 **23 Claims**



1. A method of building a tobacco stream on an air-permeable conveyor which is driven to advance the stream in a predetermined direction and cooperates with first and second sidewalls to define a channel extending in said direction and disposed at one side of the conveyor, comprising the steps of establishing a pressure differential between the one side and another side of the conveyor to thus induce the flow of air from the channel through the conveyor; establishing a source of tobacco particles; conveying streams of air into the channel and toward selected portions of the one side of the conveyor which are staggered with reference to one another, as considered transversely of and in said direction; and admitting tobacco particles from the source into the air streams so that the thus admitted particles of tobacco share the movements of the air stream and are deposited on and adhere to the selected portions of the one side of the conveyor with the attendant formation of a tobacco stream containing particles in a predetermined distribution in and transversely of said direction.

11. Apparatus for building a continuous tobacco stream, comprising a conveyor including a driven air-permeable element having first and second sides and arranged to advance the stream in a predetermined direction; suction generating means adjacent to the first side of said element; spaced-apart first and second sidewalls adjacent to the second side of and defining with said element an elongated channel extending in said direction; a source of tobacco particles; and guide means for conveying tobacco particles from said source into said channel, including a plurality of guide faces which are staggered with reference to each other, as considered transversely of and in said direction, said guide means further having edge faces remote from said element and each of said guide faces terminating at a different one of said edge faces, each of said guide faces being arranged to direct tobacco particles toward a selected portion of the second side of said element with the attendant formation of a tobacco stream containing particles in a predetermined distribution in and transversely of said direction.

4,564,027

APPARATUS FOR BUILDING A CONTINUOUS TOBACCO STREAM

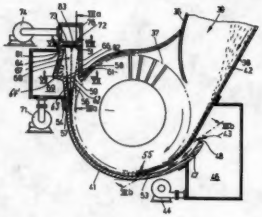
Uwe Heitmann, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Dec. 2, 1983, Ser. No. 557,732

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1982, 3244534

Int. Cl.⁴ A24C *5/18, 5/39*

U.S. Cl. 131—84.3 **20 Claims**



1. Apparatus for building a continuous tobacco stream in the distributor of a filler forming machine, comprising a conveyor including an air-permeable tobacco advancing element arranged to move in a predetermined direction and having a first side and a second side; suction generating means adjacent to the first side of said element; first and second sidewalls adjacent to the second side of and defining with said element an elongated channel extending in said direction; a source of tobacco particles; a source of compressed air; and means for feeding tobacco particles to said conveyor, comprising means for supplying particles of tobacco from the respective source along an arcuate path and into said channel so that the particles advance toward and adhere to the second side of said element under the action of said suction generating means, and means for admitting into said arcuate path streams of compressed air from the respective source in substantial parallelism with said arcuate path so that the compressed air entrains the particles of tobacco by conveying such particles along said path, each such stream of compressed air being inclined with reference to and having s component of movement in said direction to thus compel the particles of tobacco in said channel to advance toward the second side of said element while simultaneously advancing in said direction before the articles reach said element.

4,564,028

APPARATUS FOR MAKING A TOBACCO FILLER

Uwe Heitmann, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Mar. 16, 1984, Ser. No. 590,204

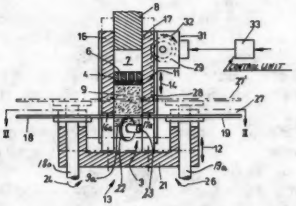
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1983, 3310035

Int. Cl.⁴ A24C *5/18, 5/31*

U.S. Cl. 131—84.4 **10 Claims**

1. Apparatus for converting a stream of tobacco particles into a filler, comprising an elongated tobacco channel arranged to receive particles of tobacco which form therein a continuous stream containing particles in excess of the quantity required in the filler and including a foraminous first wall arranged to move lengthwise of the channel and having a first side and a second side, said channel further including spaced-apart first and second sidewalls extending from the first side of

said first wall; a suction chamber adjacent to the second side of said first wall to attract the particles of the stream to said first side; a trimming device spaced apart from the first side of said first wall and arranged to remove the excess from the tobacco



stream in said channel, said sidewalls having portions adjacent to said trimming device; and means for jointly moving said trimming device and said portions of said sidewalls toward and away from said first wall.

4,564,029

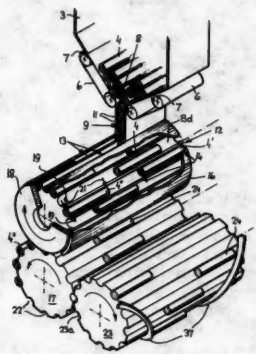
METHOD AND APPARATUS FOR ASSEMBLING PLAIN CIGARETTES WITH FILTER ROD SECTION

Alfred Hinzmann, Weams; Peter M. Preisner, Mechanicsville, and Timour T. Shu, Chesterfield, all of Va., assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Sep. 13, 1983, Ser. No. 531,918

Int. Cl.[4] A24B 5/52

U.S. Cl. 131—94 **42 Claims**



1. A method of assembling plain cigarettes or analogous rod-shaped tobacco-containing articles with filter rod sections on an endless conveyor preparatory to conversion of assembled articles and sections into filter cigarettes or like rod-shaped smokers' products, comprising the steps of delivering successive articles to the endless conveyor whereon the articles occupy first positions; advancing the delivered articles with the conveyor at right angles to their respective axes; shifting the articles axially to second positions which are spaced apart from the respective first positions by distances at least matching the length of a filter rod section so that the shifted articles provide room for delivery of fresh articles to the first positions previously occupied by the shifted articles and each shifted article is in axial register with a non-shifted article; and introducing filter rod sections between the thus obtained pairs of registering articles.

4,564,030

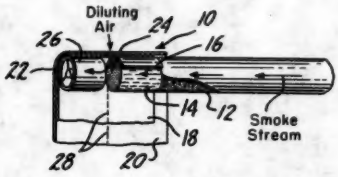
CIGARETTE FILTER ASSEMBLY

Terry D. Jessup, and Albert B. Hudson, both of Greensboro, N.C., assignors to Loew's Theatres, Inc., New York, N.Y.

Filed Jul. 16, 1982, Ser. No. 398,962

Int. Cl.[4] A24D 3/04

U.S. Cl. 131—336 **8 Claims**



1. A filter assembly for a smoking article comprising a filter mass and a wrapper means for attaching said filter assembly to a smoking article such that said filter mass is in end-to-end relation thereto, wherein said wrapper means includes an at least substantially non-porous wrapper surrounding and directly engaging said filter mass, wherein said filter assembly has a distal end and said wrapper means retains said filter mass at a fixed position spaced from said distal end, wherein said filter assembly has an open mixing chamber between said filter mass and said distal end, wherein said wrapper means has at least one perforation arranged to communicate between said chamber and outside air and sized for admitting a pre-selected ratio of diluting air to mix with mainstream smoke when smoke is drawn into said chamber through said filter mass, and comprising a secondary filter disposed in said wrapper and arranged between said open mixing chamber and said distal end, wherein said mixing chamber extends between said filter mass and said secondary filter and said secondary filter has a flow resistance value substantially lower than the flow resistance value of said filter mass such that smoke and diluted air are passed substantially unimpeded from said mixing chamber to said distal end.

4,564,031

SMOKABLE, COHERENT SHEET AND METHOD FOR ITS MANUFACTURE

Laszlo Egri, Basel, Switzerland, assignor to Tamag Basel AG, Basel, Switzerland

Filed Jun. 29, 1983, Ser. No. 509,205

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1982, 3224416

Int. Cl.[4] A24B 3/14

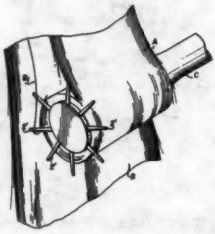
U.S. Cl. 131—353 **10 Claims**

1. A smokable, coherent sheet of disintegrated vegetable material and/or tobacco waste, comprising a dried pressure-formed sheet of said disintegrated vegetable material and/or tobacco waste, having a water-insoluble surface coating formed by the exchange of bivalent and/or trivalent metal ions of a salt with cations of at least one water-soluble, modified pectin from the group of low-esterified pectins with an esterification degree of below 40% and/or amidified, low-esterified pectin with an amidation degree of over 15%, with the concentration of the modified pectin on the sheet surface based on weight of the finished product being at least 0.5% by weight.

4,564,032
HAIR CURLER

Masakatsu Araki, Hikone, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed May 24, 1982, Ser. No. 381,574
Claims priority, application Japan, May 30, 1981, 56-82958
Int. Cl.[4] A45B *25/18*
U.S. Cl. 132—33 R 20 Claims



1. A hair applicance having a main body and a hair-winding portion, said hair-winding portion comprising a hollow rod assembly and a cap, said hollow rod assembly comprising:

a hollow cylinder;

an initially flat bristle-mounting platform having integrally formed means for fastening to said hollow cylinder and being formed about and enveloping said cylinder, said platform being made of flexible silicone rubber;

bristles integral with and extending outwardly from one surface of said platform, said bristles being made of flexible silicone rubber;

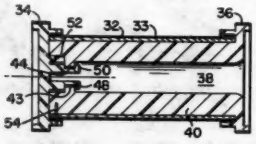
said means for fastening comprising a pair of protrusions extending from opposing edges of the surface of said platform which is opposite to the surface from which said bristles extend;

said cap being fitted over one end of said hollow rod assembly, the other end of said hollow rod assembly being mounted on said main body.

4,564,033
HAIR CURLING SYSTEM

Lai Kin, Kowloon, Hong Kong, assignor to Windmere Corporation, Hialeah, Fla.

Filed Jun. 10, 1983, Ser. No. 503,181
Int. Cl.[4] A45D *2/02*
U.S. Cl. 132—39 24 Claims



1. A hair curling roller system comprising:

a housing;

a plurality of elongated post members arranged within said housing and being capable of generating heat in hair rollers placed on said post members, all of said post members of said system having substantially the same diameter;

a plurality of rollers for curling hair, each of said rollers having an inner core means and an outer cylindrical surface for contact with hair to be rolled, said outer cylindrical surface surrounding said inner core means;

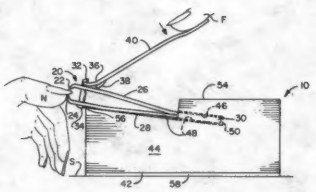
a first group of said plurality of rollers having a first outer diameter along their center section of their outer surface and a second group of said plurality of rollers having a second outer diameter along their center section of their outer surface with said second outer diameter being larger than said first outer diameter, each of said rollers of both of said groups of rollers having an axially extending elongated inner cavity extending from an opening at one end of said roller and said inner cavities of all of said rollers having substtantially the same inner diameter so that each of said rollers can be mounted on any of said post members, each of said rollers being capable of being arranged on one of said post members such that said post member extends into said inner cavity of the respective said roller;

said inner core means of each of said rollers of said second group of rollers including heat transfer means for facilitating the transfer of heat from its said inner cavity to its said outer surface so that when said rollers are heated the level of heat on the outer surface of each of said second group of rollers is approximately the same as the level of heat on said first group of rollers, said heat transfer means being located between said axially extending inner cavity and said outer cylindrical surface of each of said rollers and said second group of rollers, each of said heat transfer means in said rollers of said second group of rollers including a cylindrical hub surrounding said inner cavity and a plurality of ribs arranged around said hub forming heat radiating fins extending in a radial direction out from said hub with air spaces remaining between adjacent ribs.

4,564,034
NAIL CLIPPER HOLDER

Nathaniel T. Mackel, 1510 Mosher St., Apt. 7-A, Baltimore, Md. 21217

Filed Jan. 23, 1984, Ser. No. 573,016
Int. Cl.[4] A45D *29/00*
U.S. Cl. 132—73 7 Claims



1. In a system for cutting fingernails and toenails by means of a conventional clipper of the type having:

an elongate cutting head with first and second ends,

an upper jaw and a lower jaw with respective cutting edges spacedly opposed in a vertical plane on the first end,

substantially congruous respective rearward extensions of the upper jaw and lower jaw, substantially transverse to the upper jaw and lower jaw,

means at the second end joining together as a butt a portion of the length of said rearward extensions,

means adjacent the first end for forcing the upper and lower jaws together, including a member fixed to the lower jaw and protruding upward through a hole in the upper jaw,

a lever with a handle for pressing, the handle having a free end protrusive upwardly at an angle from a bent end of the handle resting on the upper jaw rearward extension, said bent end pivotally engaging said member,

means for holding the clipper, and said means for holding having a portion for resting on a supporting surface, the improvement comprising in combination with said clipper:

said means for holding being unitary and including: a base, means for securing instantly the clipper to or removing the clipper from the base with one motion of a user's hand, the means for securing, securing the clipper with said upper and lower jaws of the clipper projecting free of the base in position for clipping nails, with the free end of the

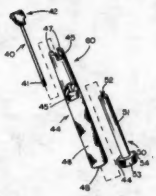
handle upward, said position for clipping nails being with said upper and lower jaws upwardly inclined to a height above the portion for resting on a supporting surface permitting a toenail to be inserted between the jaws by a nominal size foot resting, with said portion for resting, on a said supporting surface; said means for securing including structure of the base defining a socket freely receiving said butt and having an incline at an angle downwardly towards said second end, means for preventing said clipper from shifting in said socket, comprising said structure of the base that defines a socket laterally fitting said butt, and said means for preventing said clipper from shifting further including a part of the base extending beyond the socket and underlying the rearward extension of the lower jaw.

4,564,035

TOOTHPICK HOLDER

Tomie L. Turner, 3220 Anderson Dr., Lithia Springs, Ga. 30057

Filed Sep. 21, 1984, Ser. No. 652,672
Int. Cl.[4] A61C *15/00*
U.S. Cl. 132—90 **9 Claims**



1. A toothpick holder comprising a rod-shaped member having a flange formed on one end thereof providing a ledge extending normally to the longitudinal axis of the rod-shaped member and with said one end being formed with an opening extending transversely to said longitudinal axis that merges with a trough formed in said ledge, and a tubular member telescopically positioned about said rod-shaped member and an end of said tubular member movable into engagement with the ledge of said rod-shaped member, the end of said tubular member extending normally to the longitudinal axis of said rod shaped member, and when a toothpick is inserted in the openings of the rod-shaped member the tubular member is moved toward abutment with the ledge of the rod-shaped member to grip the portions of the toothpick extending out of said opening and into said trough substantially without applying shearing forces to the toothpick.

4,564,036

COIN SORTING SYSTEM WITH CONTROLLABLE STOP

Victor G. Ristvedt, Manchester, Tenn., assignor to Ristvedt-Johnson, Inc., Mount Prospect, Ill.

Filed Sep. 15, 1983, Ser. No. 532,616
Int. Cl.[4] G07D *3/14*
U.S. Cl. 133—3 A **14 Claims**

4. A coin sorting apparatus for sorting a group of mixed coins by denomination and terminating the sorting process when a predetermined number of coins have been sorted, said apparatus comprising:

rotating means for imparting a rotational movement to said group of mixed coins,

stationary means proximate to said rotating means, for guiding the rotating coins from the center of said stationary means through a region between said rotating and stationary means to the periphery of said stationary means by way of a radially outward spiral sorting path such that the rotating coins exit at the periphery of the stationary means at discrete locations determined by coin denomination,

counter means located proximate the periphery of said stationary means for counting the number of sorted coins of each denomination, and

recycle means in said stationary means responsive to a predetermined count total of any coin denomination by said counter means for redirecting said rotating coins in said region inwardly such that the rotating coins are returned to the center of the stationary means so as to prevent exiting of the coins at the periphery of said stationary means.

13. A method for terminating the sorting of coins by a stationary disk and a rotating disk mounted with the surfaces parallel to, and in close proximity with, one another, said method comprising the steps of:

(a) rotating the coins on said rotating disk,

(b) radially outwardly guiding the coins with the stationary disk into the region between said stationary and rotating disks in a single file circumferential path so as to position the radially inner edge of each coin denomination at a unique radial position,

(c) intercepting each denomination and exiting that denomination from the periphery of the stationary disk into receptacles positioned at different discrete locations for each denomination,

(d) counting said coins as they exit the stationary disk at each discrete location,

(e) reaching a predetermined count at any of the discrete location, and

(f) radially inwardly redirecting said coins in said single file circumferential path in said region back to the center of said stationary disk so as to stop further exiting of sorted coins at the periphery of the stationary disk.

4,564,037

COIN-QUEUEING HEAD FOR HIGH-SPEED COIN-SORTING AND COUNTING APPARATUS

Roger K. Childers, Portland County, and Andrew L. Trumbo, Washington County, both of Oreg., assignors to Childers Corporation, Wilsonville, Oreg.

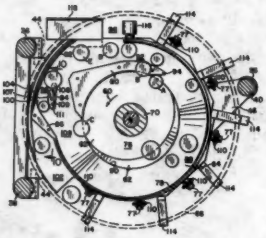
Filed Aug. 25, 1983, Ser. No. 526,420
Int. Cl.[4] G07D *3/00*
U.S. Cl. 133—3 A **14 Claims**

1. A coin-queueing head positionable in a spaced relationship over a rotating flexible surface to process randomly oriented coins of varying diameters and place them in a single layer, single file, comprising:

guide means for guiding said randomly oriented coins to provide a queue of coins including stacked pairs of coins having a first diameter and other ones of said coins having a larger second diameter;

engagement means for engaging and blocking passage of one of said stacked pair of coins;

a coin-depressing means positioned in the path of travel of said queue for permitting unrestricted travel of said stacked pair of coins to said engagement means and for depressing coins having said second diameter into said



flexible surface for travel unrestricted by said engagement means, whereby when said head is operated with said surface rotating said coins are processed into a single layer and a single file ready for sorting by denomination, even when processing coins of said second diameter having a thickness approximating or greater than the height of said stacked pair of coins.

4,564,038

HYDRAULIC FLOW DIVIDER/INTEGRATOR WITH REGULATING SLIDE VALVES WITH SINGLE CONTROL EDGE FOR TWO OR MORE CONSUMERS

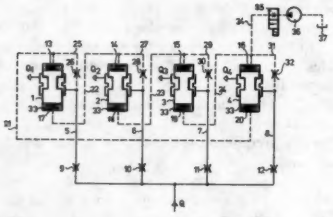
Gábor Kálmánczhelyi, Budapest, Hungary, assignor to Danuvia Kozponti Szerszam-es Keszulekgyar, Budapest, Hungary

Filed Jan. 27, 1984, Ser. No. 574,598

Claims priority, application Hungary, Feb. 1, 1983, 327/83

Int. Cl.[4] G05D *11/03*

U.S. Cl. 137—101 **3 Claims**



1. A hydraulic flow divider and integrator for operating a plurality of hydraulic loads comprising:

a source of pressurized hydraulic fluid;

a plurality of slide valves each connected between a respective load and said source and subjected to hydraulic pressure bias from opposite ends by respective regulating spaces at the opposite ends of each slide valve, said slide valves each having an inlet communicating with said source;

a respective throttle connected between each inlet and a respective one of said regulating spaces of a respective slide valve functioning to bias the respective slide valve in a valve opening direction;

means communicating between each one of said regulating spaces and the other regulating space of another of said slide valves whereby a tendency to open one of said slide valves results in a reciprocal tendency to close the others of said slide valves; and

means independent of said slide valves for pressuring the said one of said spaces of at least one of said slide valves for locking same in an open state.

4,564,039

HYDRAULIC DIFFERENTIAL LOCKING DEVICE WITH ADJUSTABLE SENSITIVITY

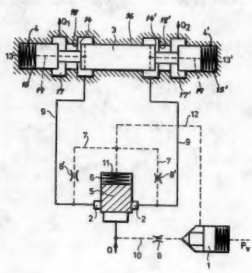
Gábor Kálmánczhelyi, Budapest, Hungary, assignor to Danuvia Kozponti Szerszam-Es Keszulekgyar, Budapest, Hungary

Filed Jan. 27, 1984, Ser. No. 574,597

Claims priority, application Hungary, Feb. 1, 1983, 326/83

Int. Cl.[4] G05D *11/03*

U.S. Cl. 137—101 **1 Claim**



1. A hydraulic differential locking device comprising:

a housing;

a slide valve displaceable in said hosing and formed with first and second control edges;

first and second valve passages formed in said housing and connected to respective first and second hydraulic loads, said first valve passage being formed with a third control edge juxtaposed with said first control edge and said second valve passage being formed with a fourth control edge juxtaposed with said second control edge, whereby displacement of said slide valve varies oppositely the respective spacings between said first and said third control edges and between said second and said fourth control edges;

first and second chambers in said housing, each chamber formed at a respective endface of said slide valve, said slide valve being formed with a first passageway communicating between said first valve passage and said first chamber and a second passageway communicating between said second valve passage and said second chamber, said first and second chambers each being provided with a respective spring disposed therein and acting on the respective endface of said slide valve biasing same into a centered position wherein the spacings are equal;

a primary hydraulic circuit connecting said first and second valve passages with a high-pressure hydraulic source for feeding a pressure flow to said first and second hydraulic loads, said primary circuit being provided with a flow-splitting variable throttle valve between said high pressure source and said first and second valve passages and having a first spring-loaded member acting against said high pressure source, whereby when the forces acting on said first and second hydraulic loads are equal the pressures in said first valve passage and the first chamber and said second valve passage and said second chamber are in equilibrium and said slide valve remains in a centered position and the pressure flow through said first and second valve passages is equal and when the forces acting on said first and second hydraulic loads is unequal the respective pressures become unequal, whereby when the inequality of the respective pressures is sufficient to overcome the resistance of a respective spring, said slide valve is displaced and the spacings become unequal, so that the

pressure flow through said first and second valve passages becomes unequal; and

a secondary hydraulic circuit connecting said first and second valve passages and said first spring-loaded member with said high-pressure hydraulic source, said secondary circuit being provided with a check valve between said first and second valve passages and said first member and said pressure source and having a second spring-loaded member acting against said high pressure source and held in a flow closing position by an external control pressure, with at least one fixed throttle valve between said high pressure source and said check valve and at least one fixed throttle valve each between said first valve passage and said check valve and between said second valve passage and said check valve, whereby upon the removal of said external control pressure, the pressure flow from said high pressure source acts on said second member to open same and allow the pressure flow to act on said first member to close said variable throttle valve, whereby the pressure from said source can flow through the fixed throttle valves to said first and second valve passages, said springs being dimensioned to maintain said slide valve centered until the imbalance of pressure reaches about 10%.

4,564,040

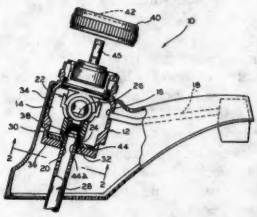
FAUCET AND LIQUID SUPPLY TUBE THEREFOR

John Rudelick, Milwaukee, Wis., assignor to Milwaukee Faucets (Div. of Universal-Rundle Corporation), Milwaukee, Wis.

Filed Jan. 24, 1983, Ser. No. 460,566

Int. Cl.[4] F16K *51/00*

U.S. Cl. 137—454.6 **13 Claims**



1. A faucet, comprising:

a body portion defining a valve chamber, said valve chamber having a discharge opening communicating with a spout, said body portion including a generally cylindrical wall terminating in a closed end having a bore defining an inlet opening;

a control valve received in said valve chamber, said control valve having an inlet passage communicating with said inlet opening, said control valve having a discharge port communicating with said discharge opening;

a flexible non-metallic liquid supply tube adapted to have one end associated with said inlet opening, said liquid supply tube having an area of increased wall thickness defining an enlarged head terminating in a shoulder at the end associated with said inlet opening, said liquid supply tube having a substantially uniform inner diameter for carrying liquid through said inlet opening and into said inlet passage, said liquid supply tube being adapted to be inserted through said bore in said closed end until said shoulder of said liquid supply tube is resting about said bore in said closed end on the side facing said valve chamber;

seal means associated with said enlarged head externally of said liquid supply tube;

means for radially confining said seal means to prevent spreading of said seal means and leakage; and

a threaded cap adapted to be secured to said wall of said body portion to form a closed top having an opening for receiving a stem of said control valve directly opposite said closed end;

said control valve being adapted to be inserted into said valve chamber without tools after insertion of said liquid supply tube, said seal means being disposed between the top of said enlarged head and the bottom of said control valve and coaxial with said inlet passage in said control valve, said inlet passage being disposed substantially coaxial with respect to said liquid supply tube and having a diameter substantially the same as the inner diameter of said liquid supply tube, said liquid supply tube, seal means, control valve and threaded cap being arranged such that said threaded cap can be tightened without tools to cause said control valve to force said seal means into radially confined sealing engagement with said enlarged head of said liquid supply tube.

4,564,041

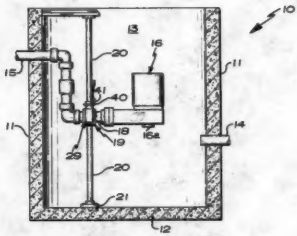
QUICK DISCONNECT COUPLING DEVICE

Dean C. Kramer, Mason City, Iowa, assignor to Martinson Manufacturing Company, Inc., Sheffield, Iowa

Continuation-in-part of Ser. No. 547,328, Oct. 31, 1983, abandoned. This application Aug. 27, 1984, Ser. No. 644,224

Int. Cl.[4] F16L *5/00*; F04B *39/14*

U.S. Cl. 137—565 **5 Claims**



1. A quick disconnect coupling device for coupling the discharge outlet of a sump pump with the outlet pipe through which waste water is discharged, the sump pump being positioned in a sump and having an intake through which waste water from the sump inlet is directed, said device comprising:

a pair of vertically disposed coupling members formed of a chemically inert metallic material and each including a vertically disposed body and a cylindrical internally threaded coupling element integral with said body and extending horizontally therefrom, the cylindrical coupling element on one coupling member being connected in communicating relation with the discharge outlet of the sump pump and the cylindrical coupling element of the other coupling member being connected in communication relation with the outlet pipe,

one of said coupling members including means integral with said body and defining a pair of vertical guide ways adjacent the marginal portions of said body of said one coupling member, the other of said coupling members having vertical guide elements integral with the body thereof adjacent the marginal portions of the latter and engaging said guide ways to couple the coupling members together so that the coupling elements thereof are in registering relation with each other, the body of said other coupling member having a horizontal flange on the upper portion thereof engaging the upper portion of the body of said one coupling member when said coupling member is in coupled relation to position said coupling in registering relation with each other,

a pair of laterally spaced apart, substantially parallel vertical guide rails in the sump and extending upwardly therefrom, one coupling member having a pair of cylindrical rail engaging elements integral therewith adjacent opposite

sides of the body thereof, the other coupling member having a pair of rail engaging elements integral with the horizontal flange thereof, said rail engaging elements of each coupling member engaging the guide rails to guide the associated coupling member during vertical movement of the latter.

4,564,042

PRESSURE-REDUCTION DEVICE FOR PRESSURIZED COUPLING MEMBERS

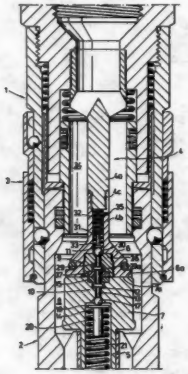
Kjell R. Ekman, Aberenrain 43, CH-6340 Baar, Switzerland

Filed Sep. 13, 1984, Ser. No. 650,152

Claims priority, application Sweden, Sep. 22, 1983, 8305130

Int. Cl.[4] F16L *37/28*

U.S. Cl. 137—614.05 **14 Claims**



1. A pressure-reduction device for a quick coupling having first and second parts, at least said first part being provided with said device and including a first valve member having a valve body by means of which a first passageway for a fluid is able to be opened and closed, said device comprising a spherical member arranged in said valve body so as to be capable of bearing against a seat in a closed position in response to a biasing effect of a spring member positioned in a first recess defined by a wall of said valve body, and a pressure pin held in a second recess in said valve body by means of a bushing capable of interacting with a flange on an intermediate portion of said pressure pin, one end of said pressure pin being capable of interacting with said spherical member and another end of said pressure pin being capable of interacting with said second part of the coupling; said spring member biasing said spherical member against said seat via a power transmission member which is guided by the wall of said first recess; said spherical member being arranged to be moved to an open position against the biasing effect of said spring member by said pressure pin as the first part of the coupling is connected to the second part of the coupling so as to open a second passageway for said fluid before said first passageway is opened by the valve body of said first valve member; and said opening of said second passageway causing a pressure-reduction effect in the first part of the coupling by diverting a small quantity of said fluid from the inside to the outside of the first part of the coupling via said second passageway.

4,564,043

STEPPING VALVE

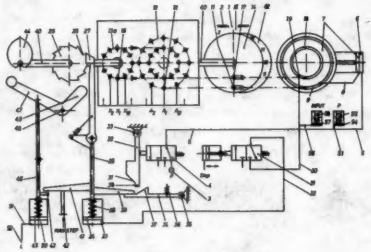
Karl Trittler, Aldingen, Fed. Rep. of Germany, assignor to J. Hengstler KG., Aldingen and Festo KG, Esslingen, both of, Fed. Rep. of Germany

Filed Jul. 3, 1984, Ser. No. 627,432

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1983, 3326134

Int. Cl.[4] F15B *18/00*

U.S. Cl. 137—624.18 **22 Claims**



1. In a stepping valve comprising

a plurality of fluid outlets for delivering a pneumatic actuating fluid for performing respective operations,

a plurality of feedback inlets, each of which is associated with one of said fluid outlets and adapted to receive a pneumatic feedback signal indicating that the operation performed by actuating fluid from the associated fluid outlet has been completed,

an actuating fluid inlet adapted to be connected to a source of pneumatic actuating fluid,

a non-rotatable valve body having a port face formed with a first circular series of fluid inlet ports and with a second circular series of fluid outlet ports, said first and second circular series being concentric to each other, said fluid inlet and outlet ports communicating with respective ones of said feedback inlets and fluid outlets, each of said feedback inlet ports and one of said fluid outlet ports constituting a pair of ports,

a rotatable valve member, which is concentric to said first and second series of fluid ports and formed with radially spaced apart first and second through passages, each of which opens on the side of said valve member facing said port face and on the opposite side of said rotary valve member, said rotatable valve member being rotatable to a plurality of angularly spaced apart positions in each of which said first and second through passages register and communicate with said feedback inlet port and said fluid outlet port of one of said pairs of fluid ports,

drive means operable to rotate said rotary valve member in successive steps to successive ones of said angularly speed apart positions,

drive control means for controlling the operation of said drive means in response to said feedback signals, said drive control means having a feedback signal inlet, and

coupling means for coupling said feedback control inlet to said first through passage for connecting said actuating fluid inlet to said second through passage,

the improvement residing in that

said coupling means comprise a sealing piston, which is held against rotation and disposed on said opposite side of said rotatable valve member and has a sealing face facing said opposite side of said rotatable valve member, said sealing piston being axially movable into and out of sealing engagement between said sealing end face and said opposite side of said rotatable valve member, said sealing piston having first piston passage means communicating with said feedback signal inlet and second piston passage means

communicating with said actuating fluid inlet, said first and second piston passage means being arranged to communicate with said first and second through passages, respectively, when said sealing end face of said piston is in sealing engagement with said rotatable valve member on said opposite side thereof and said rotatable valve member is in any of said angularly spaced apart positions,

spring means are provided, which urge said sealing piston away from said rotatable valve member,

signal-generating means are provided for generating a step completion signal in response to the completion of each of said steps,

pressure-applying means are provided for applying pneumatic pressure from said actuating fluid inlet to said sealing piston in response to each of said step completion signals to force said sealing piston toward said rotatable valve member against the action of said spring means, and

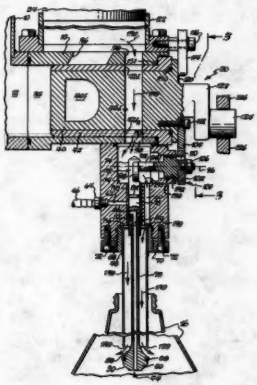
pressure-relieving means are provided for pressure-relieving said piston in response to each of said feedback signals.

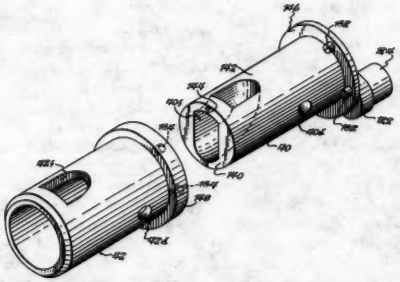
4,564,044

ROTATABLE VALVE ASSEMBLY

Victor Biller, Penfield, N.Y., and Adelmar Faessler, Hendersonville, N.C., assignors to Figgie International Inc., Willoughby, Ohio

Filed Mar. 12, 1984, Ser. No. 588,861
Int. Cl.[4] F16K *11/085, 25/00*
U.S. Cl. 137—625.24 **7 Claims**





1. A rotatable valve assembly for an apparatus of the character described, and capable of being received within a valve body having a cylindrical valve bore therein, said rotary valve assembly comprising:

a substantially solid valve plug provided with a suction inlet at one end, a radially outwardly extending flange at the other end, a main body portion which extends from said one end to said flange, said portion having a cylindrical surface, and an intermediate discharge port in said main body portion and intersecting said cylindrical surface at a pair of opposed locations, said suction inlet also intersecting said cylindrical surface at another location;

a generally cylindrical rotary valve sleeve, the diameter of the inner cylindrical surface of the sleeve being approximately the same as the diameter of the cylindrical surface of the main body portion of the valve plug, and the outer cylindrical surface of the sleeve being approximately the same diameter as the cylindrical bore of the valve body so that the valve sleeve may be telescopically received therein, said valve sleeve being provided with a first opening and a pair of opposed second openings, all of said openings capable of being simultaneously aligned with the suction inlet and the discharge port in the valve plug, respectively;

alignment means extending between a radially outwardly extending surface of said flange adjacent the cylindrical surface on said valve plug and one end of the sleeve to hold the parts in their desired assembled relationship but permitting disassembly of the parts, said alignment means causing the valve sleeve to rotate when the valve plug is rotated; and

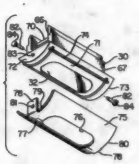
seal means between said cylindrical surfaces to insure that there is no contamination past the seal means.

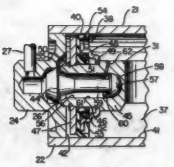
4,564,045

REVERSING VALVE CONSTRUCTION AND METHOD OF MAKING THE SAME

Rudolf K. Koch, and Octávio F. Affonso, both of Rua Tronca, 1370 - Caxias do Sul - C.P. 308, Brazil

Filed Jun. 18, 1984, Ser. No. 621,608
Int. Cl.[4] F16K *11/02, 31/122*
U.S. Cl. 137—625.43 **10 Claims**





1. In a reversing valve construction having a housing means provided with a chamber carrying a movable valve member therein that controls port means of a valve seat means of said housing means through the relative position of a cavity of said valve member relative to said port means, said port means comprising first, second and third ports disposed in spaced apart and straight line relation and said cavity bridging said first and second ports while exposing said chamber to said third port when said valve member is in one position thereof and bridging said second and third ports while exposing said chamber to said first port when said valve member is in another position thereof, said valve member carrying a flexible annular sealing member that is disposed between an annular surface of said valve member and said valve seat means and surrounds

said cavity to seal said cavity to said valve seat means while permitting sliding movement therebetween, said housing means carrying biasing means that is operatively associated with said valve member and said housing means to urge and flex said sealing member into sealing engagement with said valve seat means so as to tend to sealingly conform said flexible sealing member to the contour of said valve seat means, the improvement wherein said valve member has a rigid annular projection extending from said annular surface thereof and engaging said annular sealing member outboard of and around said cavity.

6. In a reversing valve construction having a housing means provided with a movable valve member therein that is operatively interconnected to a piston unit disposed in said housing means and having opposed piston heads each of which is disposed in sliding and sealing engagement with an internal peripheral surface of said housing means so as to define a main chamber between said piston heads and a pair of outboard control chambers respectively between said piston heads and opposed ends of said housing means, each said piston head having bleed orifice means interconnecting its respective control chamber to said main chamber, each said piston head having a poppet valve member for closing a valve seat carried by the respective end of said housing means and leading to its respective control chamber, the improvement wherein each said poppet valve member has a stem provided with an end that is universally mounted to its respective piston head so as to self-align said poppet valve member with its respective valve seat when moved thereagainst by said piston unit, each said piston head having an opening therein receiving said stem of its respective poppet valve member and leading to its respective control chamber, each said opening defining an end surface thereof in its respective piston head against which said end of said stem of its respective poppet valve member universally engages, said bleed orifice means of each said piston head interconnecting said main chamber to its respective opening and, thus, to its respective control chamber.

4,564,046

SOLENOID VALVE

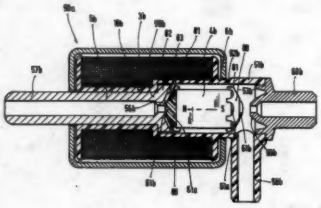
Corneliu Lungu, Bühlertal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 432,395, Sep. 30, 1982, Pat. No. 4,524,797. This application Jul. 14, 1983, Ser. No. 513,988

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1982, 3206692

Int. Cl.[4] F16K *31/08, 11/04*

U.S. Cl. 137—625.65 **7 Claims**



1. A solenoid valve, including an exciter coil and an armature in the form of a permanently magnetic bar which is coaxially movable in said coil and polarized in the direction of its axial movement, comprising a first magnetic flux conducting member of a soft magnetic material which is inserted partially into said coil to form a limit stop for a rest position of the armature, a second magnetic flux conducting member of a soft magnetic material adjoining said coil in the range of movement of the armature and being spaced from the armature by an air gap, the cross-section of said second magnetic flux conducting member when viewed in the direction of movement of the armature, being in the range of said air gap shorter than the axial dimension of the armature to close magnetic force lines holding said armature in said rest position when said coil is deenergized; at least one valve seat facing an end face of the armature, an annular magnetically conductive piece having on its periphery a plurality of clamping fingers attached to a peripheral portion of the armature, and a valving element of a non-magnetic material held in position on said end face and projecting through said annular piece to cooperate with said valve seat.

4,564,047

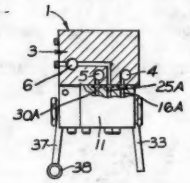
CONTROL VALVE

Lewis R. B. Bower, Wakefield, United Kingdom, assignor to Fletcher Sutcliffe Wild Limited, Wakefield, England

Filed Mar. 27, 1984, Ser. No. 593,807

Int. Cl.[4] E03B *3/00*

U.S. Cl. 137—627.5 **15 Claims**

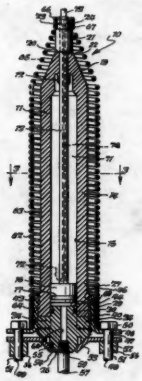


14. A control valve particularly for effecting control of a hydraulic circuit comprising: a plurality of first valve means, each including a first valve body; a hydraulic fluid supply port, a hydraulic fluid exhaust port, and a hydraulic fluid delivery port provided in said first valve body; means for normally biasing each of said first valve means to a position for making fluid flow connection between said delivery port and said exhaust port, and for closing said supply port; and first manual control means associated with each first valve means for manually displacing its associated first valve means to a first extent in a first direction for causing closure of said connection between said delivery port and said exhaust port and to a further extent in said first direction for opening a fluid flow connection between said delivery port and said supply port; and a second valve means including a second valve body; a second inlet port connectable to a source of hydraulic fluid, a second hydraulic fluid exhaust port, and a second hydraulic fluid delivery port provided in said second valve body, said second delivery port being connectable to said supply port of each said first valve body; means for normally biasing said second valve means to a position for making fluid flow connection between said second delivery port and said second exhaust port, and for closing said second inlet port; and second manual control means for manually displacing said second valve means to a first extent in a second direction which is opposite to said first direction for causing closure of said connection between said second delivery port and said second exhaust port, and to a further extent in said second direction for opening a fluid flow connection between said inlet port and said delivery port, to make fluid available to said supply port of each of said first valve bodies; whereby a hydraulic pressure is only transmitted from said control valve when there is activated not only at least one said first manual control means of one said first valve body, but also said second manual control means of said second valve body; wherein at least one of said first manual control means and second manual control means are located sufficiently closely to one another to be gripped by one hand of an operator for simultaneous operation.

4,564,048
PRESSURE ACCUMULATOR WITH COMPOSITE HELICAL SPRING

Paul H. Taylor, Grand Island, N.Y., assignor to Tayco Developments, Inc., North Tonawanda, N.Y.

Filed May 25, 1984, Ser. No. 614,334
Int. Cl.⁴ F16L *55/04*
U.S. Cl. 138—31 **27 Claims**

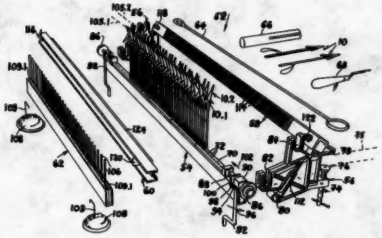


1. A pressure accumulator comprising a cylinder having first and second cylinder ends, a piston in said cylinder, a bore in said first cylinder end, a piston rod attached to said piston and extending through said bore, a fluid inlet at said second cylinder end for conducting fluid into said cylinder, an external portion on said piston rod located outside of said cylinder, a helical spring encircling said cylinder, first and second spring ends on said helical spring, first attachment means fixedly coupling said first spring end to said external portion of said piston rod, and second attachment means coupling said second spring end to said cylinder remote from said first end.

4,564,049
WEAVING DEVICE

Rüdiger O. M. Allihn, Bellville, South Africa, assignor to Eager Weaver (Proprietary) Limited, Cape Town, South Africa

Filed Jan. 5, 1984, Ser. No. 568,410
Claims priority, application South Africa, Jan. 6, 1983, 83/0064
Int. Cl.⁴ D03D *29/00*
U.S. Cl. 139—33 **12 Claims**

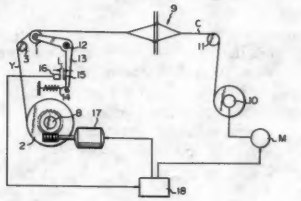


1. A weaving device, which includes
(a) a support base adapted to support a number of weaving needles in spaced substantially parallel relationship;
(b) two groups of weaving needles, each needle having a longitudinal axis and being adapted to be supported removably at one end by the support base, each needle further having a needle body, a free projecting tip at one end of the needle body and, remote therefrom, attachment means for attachment of a warp thread; and
(c) moving means adapted for causing at a first instance tips of the first group of needles to be on a first substantially straight line and the tips of the second group of needles to be on a second substantially straight line, and at a second instance the tips of the first group of needles to be moved to be on a third substantially straight line.

4,564,050
METHOD FOR STARTING THE OPERATION OF A LOOM

Hideo Hirano, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Feb. 23, 1984, Ser. No. 583,058
Claims priority, application Japan, Feb. 28, 1983, 58-31986
Int. Cl.⁴ D03D *49/04*
U.S. Cl. 139—97 **8 Claims**



1. A method for starting the operation of a loom from a stationary condition, comprising the steps of:
a. presetting a first value V_1 in a control unit, which corresponds to first wrap tension T_1 desirable for starting the loom operation, as well as a reference value O corresponding to a standard warp tension T_0 during normal weaving,
b. detecting tension T of a warp let off from a warp beam,
c. comparing the detected value V corresponding to the tension T to the preset value V_1 in the control unit,
d. outputting, when both values V_1 and V are different from each other, a command signal for rotating the warp beam in the normal or reverse direction unitl both values V_1 and V coincide with each other, to means for driving the wrap beam independently from the remaining part of the loom,
e. starting the operation of the loom after the first warp tension T_1 has been attained as a result of step d, and
f. controlling the loom operation so that the standard warp tension T_0 is attained.

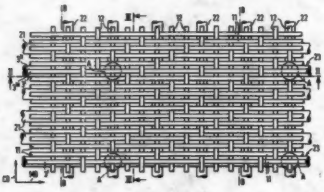
4,564,051
MULTIPLE PLY DEWATERING SCREEN PARTICULARLY FOR A WEB FORMING PART OF A PAPER MAKING MACHINE

Heinz Odenthal, Monheim, Fed. Rep. of Germany, assignor to Andreas Kufferath GmbH & Co. KG, Dueren-Mariaweiler, Fed. Rep. of Germany

Filed Jul. 12, 1984, Ser. No. 631,936
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1983, 3325780[U]; Jul. 16, 1983, 8320610
Int. Cl.⁴ D03D *13/00*
U.S. Cl. 139—425 A **10 Claims**

1. A multi-ply dewatering screen for use in a paper making machine, comprising at least two fabric plies made of longitudinal and traverse filamentary elements whereby the top side of the normally upper ply represents the top side of the screen and the lower side of the lowermost ply represents the machine side of the screen; the plies being tied together at different tie points; the longitudinal and traverse filamentary elements in the upper ply being mono- or multi- or staple-filaments; a part

of the longitudinal and/or traverse filamentary elements in the lowermost ply being mono- or multi- or staple-filaments and another part being in the form of non-twisted bundles of component filaments; the thickness of each bundle corresponding substantially to the thickness of the mono- or multi- or staple-filaments in the lowermost ply; said the points between the plies being formed, respectively, by passing a component fila-



ment of a bundle over at least one crossing mono- or multi- or staple-filament in the upper ply and diverting a corresponding mono- or multi- or staple-filament in the upper ply under the crossing mono- or multi- or staple filaments in the latter and the thickness of the component filaments forming tie points in the upper ply corresponding substantially to that of the mono- or multi- or staple-filaments in the upper ply.

4,564,052

DOUBLE-LAYER FABRIC FOR PAPER MACHINE SCREEN

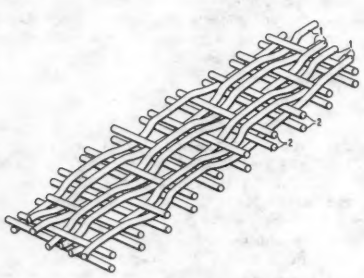
Georg Borel, Reutlingen, Fed. Rep. of Germany, assignor to Hermann Wangner GmbH & Co. KG, Fed. Rep. of Germany

Continuation of Ser. No. 443,053, Nov. 19, 1982, abandoned. This application Nov. 28, 1984, Ser. No. 676,208

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1981, 3146385

Int. Cl.[4] D03D *15/00*; D21F *1/10*

U.S. Cl. 139—425 A **3 Claims**



1. A paper machine forming fabric comprising a double layer woven fabric, said fabric having longitudinally extending warp wires and two layers of transversely extending weft wires, at least part of the warp wires being interwoven with the weft wires of both said layers, said fabric being characterized in that said warp wires are passed pair-wise in parallel over at least two weft wires on the paper side of the fabric and in that, in the fabric interior, said warp wires of each pair extend at an angle with respect to each other, and form an opening in the transverse direction.

4,564,053

WEFT GRIPPER DRIVE FOR LOOMS

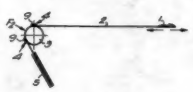
Philippe van Bogaert, Brussel, Belgium, assignor to N.V. Weefautomaten Picanol, Ieper, Belgium

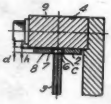
Filed Mar. 21, 1984, Ser. No. 591,986

Claims priority, application Belgium, May 18, 1983, 2/60094

Int. Cl.[4] D03D *47/00*

U.S. Cl. 139—449 **8 Claims**





1. A weft gripper drive for looms of the type comprising a flexible perforated tape at one end of which a gripper is fixed and an oscillating gear-wheel that enmeshes with the said tape along an arc of its circumference, whereby guiding devices are provided at the points where the tape leaves the wheel, characterized thereby that the tooth height of the wheel is smaller than the thickness of the tape and that the form and dimensions of the teeth and of the perforations barely allow a mutual enmeshment, whereby the side of the tape directed towards the wheel, in the enmeshment zone, is tangent to the root circle of the gearing of the wheel.

4,564,054

FLUID TRANSFER SYSTEM

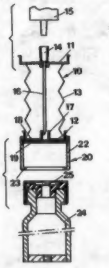
Bengt Gustavsson, Bergsbogatan 29, Västra Frölunda, Sweden (421079)

Continuation-in-part of Ser. No. 536,647, Sep. 28, 1983, abandoned. This application May 2, 1984, Ser. No. 606,184

Claims priority, application Sweden, Mar. 3, 1983, 8301176

Int. Cl.[4] B65B *3/04*

U.S. Cl. 141—329 **27 Claims**



1. A fluid transfer system for transferring a substance from a first vessel to a second vessel avoiding contamination, said system being attached or connectible to said first vessel or a cover enclosing the first vessel, comprising:

(1) a first member hermetically enclosing a puncturing member provided with a passageway, said first member having a first sealing member for being passed and retracted therethrough, at which the sealing effect of said sealing member is maintained after retraction of the puncturing member;

(2) a second member having a second sealing member; mating connection means arranged on said first and second members for providing a releasable locking of said members with respect to each other, said sealing members in the connected position of the first and second members being located in a position with respect to each other so that they can be penetrated by the puncturing member, wherein after transfer of said substance the puncturing member is retractable to a position in which said puncturing member is hermetically enclosed in said first member and the first and second members are disconnectable from each other.

4,564,055

MOLDING PROFILE OF TIRE CARCASSES

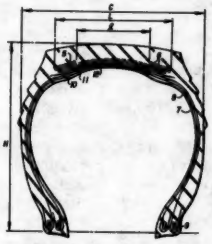
Giuliano Ghilardi, Milan, Italy, assignor to Societa Pneumatici Pirelli S.p.A., Milan, Italy

Continuation of Ser. No. 229,505, Jan. 29, 1981, abandoned. This application Feb. 2, 1983, Ser. No. 463,241

Claims priority, application Italy, Feb. 29, 1980, 20247 A/80

Int. Cl.[4] B60C *3/00, 9/22*

U.S. Cl. 152—450 **6 Claims**



1. A pneumatic tire for motor vehicles comprising a toric-shaped radial carcass of one or more plies of rubberized cord fabric, a tread band on a crown portion of said carcass, a breaker structure inserted between said tread band and said carcass, a pair of sidewalls connected through shoulders to said tread band and terminating radially inwardly with bead portions, said breaker structure comprising at least two radially superimposed layers of metallic crossed cords, parallel to each other in each layer and crossed with those of an adjacent layer and symmetrically inclined with respect to the circumferential direction of the tire at an angle between 10° and 30°, said layers being staggered one with the other at their extremities, and comprising also a restraining structure extending circumferentially at each edge of said breaker structure, the axial outer border of said restraining structure being substantially coincident with that of the widest metallic crossed cord layer, wherein said carcass ply or plies have, after molding and vulcanizing, a cross-section profile with a curvilinear tract, adjacent to each shoulder, whose concavity is directed towards the outside of the tire, the axial outer extremity of said tract being substantially coincident with the axial outermost portion of said restraining structure.

4,564,056

VALVE FOR WHEELS FOR TUBELESS BICYCLE TIRES

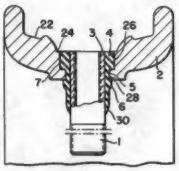
Heinrich Doring, Arolsen, Fed. Rep. of Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Oct. 19, 1983, Ser. No. 543,267

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1982, 3238928

Int. Cl.[4] B60C *29/00*

U.S. Cl. 152—427 **12 Claims**



1. A valve for a wheel for a tubeless bicycle tire having mounted beads, said wheel having a wellbase including a base of a narrow bicycle rim which is provided with a valve opening for receiving said valve sealingly therein regardless of overall dimensional limitations thereof; said vlave comprising:

a valve body having two end portions, with the axially outer one of said end portions being provided with a cylindrical projection having an outer dimension; the base of said wellbase of said rim of said wheel being provided with a valve opening recess having an inner dimension, and the outer dimension of said cylindrical projection corresponds to the inner dimension of said valve opening recess in such a way that in the installed state of said valve, the axially outer end portion of said valve body is flush with the base of said well base of said rim so that said valve body is kept out of the way of the tubeless tire beads in the mounting position thereof on the narrow bicycle rim.

4,564,057

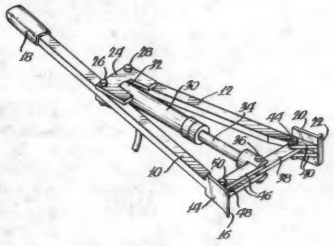
BEAD LOOSENING TOOL

Francis L. Zrostlik, Garner, Iowa, assignor to Iowa Mold Tooling Company, Inc., Garner, Iowa

Filed Nov. 21, 1983, Ser. No. 553,960

Int. Cl.[4] B60C *25/00*

U.S. Cl. 157—1 **2 Claims**



1. A method of loosening an axially inner bead of a tire forming one of two slightly spaced tires mounted on repective adjacent wheels defining a dual wheel set without disassembling one wheel from the set or removing the set from a vehicle comprising the steps of:

(a) inserting a tool having two relatively movable surfaces between the tires of a dual wheel set while the wheels thereof are interconnected on a vehicle;

(b) locating one of said tool surfaces against the bead of one

of the tires while locating of other of said tool surfaces against the wheel mounting the other of the tires;

(c) moving said tool surfaces apart to loosen the bead of said one tire; and

if necessary to fully loosen the bead of said one tire, repeating steps (b) and (c) at one or more different locations about the periphery of the dual wheel set.

4,564,058

CONTROLLING THE FEEDING OF CASTING POWDER

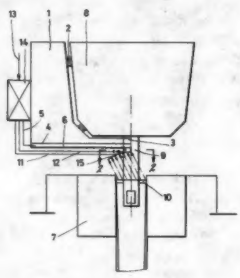
Hans Schrewe, Duesseldorf; Fritz-Peter Pleschiutschnigg, Dortmund; Hans van Bonn, Duisburg; Karl Hölter, and Gustav Wiegard, both of Witten, all of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf and Gustav Wiegard Maschinenfabrik, Witten, both of, Fed. Rep. of Germany

Filed Jul. 20, 1979, Ser. No. 59,266

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1978, 2833867

Int. Cl.[4] B22D *27/00*

U.S. Cl. 164—72 **4 Claims**



1. Apparatus for the control of feeding casting powder to a mold for continuous casting, there being a storage bin for powder having an outlet and a perforated bottom underneath of which is disposed a plenum chamber, the apparatus comprising:

gas feeder means connected to the plenum chamber;

pneumatic control means disposed in the gas feeder means to adjust a rate of flow of gas through the feeder means, thereby adjusting the pressure in the plenum chamber and the amount of gas forced into the bin to cause fluidization of powder therein and fluid-like outflow of powder onto molten metal in the mold;

a metal sheet disposed adjacent to the surface of molten metal in the mold and being heated by radiation therefrom; and

a temperature-sensitive element operatively connected to the sheet for being heated by the sheet, having, in turn, been heated by said radiation, and providing a signal representing accordingly the surface temperature of the content of the mold, the element being connected to the control means for causing the control means to provide the adjustment in response to said signal.

4,564,059

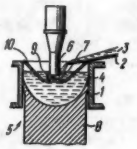
METHOD FOR CONTINUOUS CASTING OF LIGHT-ALLOY INGOTS

Vladimir I. Dobatkin, Rezervny proezd, 8, kv. 252; Georgy I. Eskin, ulitsa Vavilova, 48, kv. 281; Stella I. Borovikova, Vinnitskaya ulitsa, 13, kv. 140; Robert R. Malinovsky, Leningradsky prospekt, 75, kv. 448, all of Moscow; Viktor K. Junyshev, Verkhnaya Salda, ulitsa K. Marxa, 11, kv. 41; Alexandr I. Matveev, Verkhnaya Salda, ulitsa K. Libknekhta, 12, kv. 34, both of Sverdlovskaya oblast; Gennady S. Makarov, ulitsa Matveevskaya, 10, korpus 2, kv. 64, Moscow; Viktor A. Danilkin, ulitsa Bobruiskaya, 16, kv. 18, Moscow; Andrei D. Andreev, ulitsa Bobruiskaya, 20, kv. 69, Moscow; Boris I. Bondarev, Mozhaiskoe shosse, 80, kv. 113, Moscow; Petr N. Shvetsov, Barvikhinskaya ulitsa, 8, korpus 2, kv. 51, Moscow; Pavel E. Khodakov, Skolkovskoe shosse, 16, kv. 51, Moscow; Gennady V. Cherepok, prospekt Metallurgov, 73, kv. 54, Kuibyshev; Vladimir M. Baranchikov, ulitsa Isetskaya, 6, kv. 16, Kamensk-Uralsky, all of U.S.S.R.; Petr N. Silaeva, deceased, late of Sverdlovskaya oblast, U.S.S.R., and by Anna A. Silaeva, administrator, Verkhnaya Salda, ulitsa K. Libknekhta, 8, kv. 3, Sverdlovskaya oblast, U.S.S.R.

Continuation-in-part of Ser. No. 273,655, Jun. 13, 1981, abandoned. This application Dec. 23, 1983, Ser. No. 565,140

Int. Cl.[4] B22D *27/02*

U.S. Cl. 164—478 **19 Claims**



1. A method for continuous casting of a light-alloy ingot, comprising:

pouring a melt material into a continuous casting mold,

applying an ultrasonic action to said melt by means of at least one radiator for purifying said melt and refining the structure of said ingot solidifying from said melt; said ultrasonic action being effected uniformly throughout the cross-section of said melt to form a cavitation zone, h, at an intensity of 2 to 60 W/cm^2 depending on the cross-sectional areas of said solidifying ingot, said radiator being immersed in said melt to a depth of 1/12 to 1/4 of the sound wavelength in said melt material, the temperature of said melt material being maintained between 60 to 150° C. above the liquidus temperature of said melt material wherein $W \approx S_1 \cdot h$; and

withdrawing ingot now having an extra refined structure.

4,564,060

RADIATOR INCLUDING A COVER THEREFOR

Rudolf Andres, Sindelfingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 15, 1984, Ser. No. 661,209

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1983, 3337780

Int. Cl.[4] F01P *7/10*

U.S. Cl. 165—98 **3 Claims**

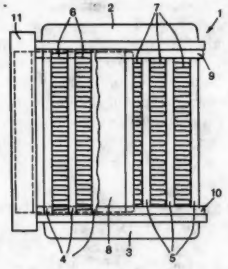
1. Radiator arrangement comprising:

a first group of cooling fluid tubes and cooling fins disposed for the flow of cooling air transversely thereto,

a second group of cooling fluid tubes and cooling fins disposed for the flow of cooling air transversely thereto,

said first and second groups being disposed in series one behind the other in the direction of flow of cooling air, and

movable cover means interposed in an interspace between said first and second groups, such that the functioning



capacity of the cover under adverse circumstances is improved.

4,564,061

COOLING SYSTEM FOR COMMUNICATIONS DEVICES WITH HIGH POWER LOSSES

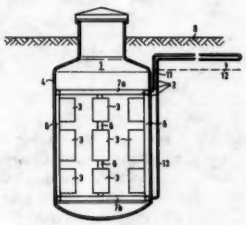
Erich Rauth, Auenwald, and Ernst Form, Sulzbach, both of Fed. Rep. of Germany, assignors to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed Dec. 16, 1982, Ser. No. 450,425

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150166

Int. Cl.[4] **F28D** *15/00;* **H01F** *27/10*

U.S. Cl. 165—104.33 **20 Claims**



1. A cooling system for communications equipment, said system comprising:

a closed container for housing the equipment and protecting the equipment against environmental influences, said container having an outer wall made of heat conductive material, and said container being constructed for burial of a major portion of said container in the earth and for a heat transfer relationship therewith;

a fluid filled conduit system including conduits disposed within said container and a conduit portion which is in heat transfer relationship with said outer wall and which has a fluid inlet positioned near the bottom of the container and a fluid outler positioned above the fluid inlet, said inlet and outlet being associated with said major portion, said conduit system further including outside disposed conduits arranged outside said container for burial in the earth and for a heat transfer relationship therewith, said outside disposed conduits including a riser conduit connected to said outlet for receiving heated fluid from said conduit portion and a down conduit connected to said inlet for delivering cooled fluid to said conduit portion; and

heat conducting means in thermal contact with the equipment and said wall for transmitting heat generated by the equipment to said wall and to said conduit system, wherein heat generated by said equipment is transferred to the fluid in said conduit system and heat in said fluid is transferred to the earth, said fluid being circulated in said conduit system solely due to temperature and density variations of said fluid.

10. A cooling system for communications equipment, said system comprising:

a closed container for housing the equipment and protecting the equipment against environmental influences, said container having an outer wall made of heat conductive material, and said container being constructed for burial of a major portion of said container in the earth and for a heat transfer relationship therewith;

a fluid filled conduit system including a conduit portion which is in heat transfer relationship with said outer wall and which has a fluid inlet positioned near the bottom of the container and a fluid outlet positioned above the fluid inlet, said inlet and outlet being associated with said major portion, said conduit system further including outside disposed conduits arranged outside said container for burial in the earth and for a heat transfer relationship therewith, said outside disposed conduits including a riser conduit connected to said outlet for receiving heated fluid from said conduit portion and a down conduit connected to said inlet for delivering cooled fluid to said conduit portion; and

heat conducting means comprising Peltier elements, said equipment being in thermal communication with said wall and said conduit system only via said Peltier elements for transmitting heat generated by the equipment to said wall and to said conduit system, wherein heat generated by said equipment is transferred to the fluid in said conduit system and heat in said fluid is transferred to the earth, said fluid being circulated in said conduit system solely due to temperature and density variations of said fluid.

4,564,062

RECIRCULATION HEAT EXCHANGER AND APPARATUS INCLUDING SAME

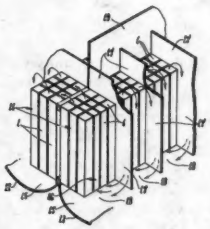
Edward E. McDougall, Mackay, Australia, assignor to Racecourse Co-Operative Sugar Association Ltd., Queensland, Australia

Filed Dec. 9, 1981, Ser. No. 329,055

Claims priority, application Australia, Dec. 9, 1980, PE6846

Int. Cl.[4] **F28F** *13/06, 1/04, 9/02*

U.S. Cl. 165—108 **7 Claims**



1. A heat exchanger including, a group of open-ended tubes arranged substantially parallel to one another, each said tube being substantially rectangular in transverse cross-section, said group being formed by a plurality of substantially parallel and laterally spaced rows of said tubes, adjacent tubes of each said row being laterally spaced apart, the transverse cross-sectional area of the space between each two adjacent tubes of the same and different said rows is substantially smaller than the transverse cross-sectional area of each said tube, transverse spacer means at each of two opposite ends of said group closing-off the space between the terminal end portions of adjacent tubes of both the same and different said rows, a steam chamber

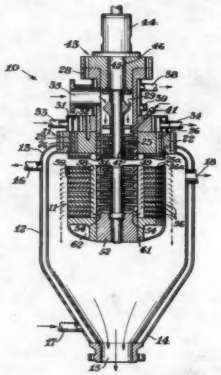
formed at least in part by the interconnected spaces between adjacent said tubes, a plurality of longitudinal spacer members provided at each of two opposite sides of said group of tubes, each said spacer member comprises a flat metal bar which extends in the longitudinal direction of said tubes and is located edgewise within the space and between a respective two adjacent said tubes, the transverse cross-sectional size of each said spacer member is substantially less than the transverse cross sectional size of the said space within which it locates, each said spacer member is located at the periphery of said group of tubes and closes off the space between the respective said adjacent tubes at the respective said side of the group of tubes, and the surface of each said tube which extends between each two adjacent said spacer members forms part of an external surface of said heat exchanger.

4,564,063

ANNULAR HEAT EXCHANGER

James E. Tollar, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 16, 1984, Ser. No. 600,935
Int. Cl.[4] F28F *13/12*; B01F *15/06*
U.S. Cl. 165—109.1 **6 Claims**



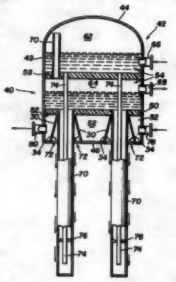
1. A devolatizing heat exchanger, the heat exchanger comprising a generally annular body having a first axially closed end and a second open end, the annular body having a generally annular wall and generally axially extending heat exchange fluid conduits generally uniformly axially disposed, within the body a plurality of generally radial conduits disposed in the annular wall, providing communication between an inside space defined by the annular wall and space external to the annular wall, the radial passageways having a length to diameter ratio of at least 4, the heat exchanger being disposed within a jacketed vessel having heat exchange fluid connections providing ingress and egress for a heat exchange fluid to a jacket of the jacketed vessel, the jacketed vessel having an upper end and a lower end, a volatile outlet port disposed between the upper and lower ends, the volatile outlet port providing communication between space internal to the jacketed vessel and space external thereto, a material discharge port at the lower end of the jacketed vessel, a header assembly directly affixed to the upper end of the jacketed vessel, the header assembly being of generally cylindrical configuration, the header assembly being partially disposed within and coaxial with the annular heat exchanger and partially external to the jacketed vessel, the header defining a generally cylindrical cavity within the header adjacent the heat exchanger, said cavity being generally coaxial with the heat exchanger, an annular space between the heat exchanger annular wall and header assembly defined by the heat exchanger and header assembly, a material supply passage defined by the header assembly disposed external to the jacketed vessel, the material supply passage being in communication with the header generally cylincrical cavity, the generally cylindrical cavity being in coummunication with the annular space between the heat exchanger and the header assembly at a location remote from the material supply passage and generally adjacent the first axially closed end of the generally closed body, a plurality of pins disposed within the cylindrical cavity of the header assembly, the pins extending generally radially inward, and a rotatable agitator rotatably disposed within the cylindrical cavity, the agitator having a plurality of blades adapted to interdigitate with the pins.

4,564,064

FALLING FILM HEAT EXCHANGER WITH MEMBER TO DISTRIBUTE LIQUID ON EXTERNAL SURFACES OF TUBES

Vincent F. Allo, Warrenville, and Donald C. Stafford, Hinsdale, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Division of Ser. No. 494,937, May 16, 1983, Pat. No. 4,519,448. This application Dec. 5, 1984, Ser. No. 678,419
Int. Cl.[4] F28D *3/04*
U.S. Cl. 165—118 **6 Claims**



1. A falling film heat exchanger comprising:

a vessel having a top, bottom and side wall enclosing a liquid feed box in the bottom portion, and heat exchange liquid space in the top portion separated by a tube sheet;

a plurality of heat exchange tubes, supported by the tube sheet, extending downwardly in the feed box and out through oversized holes larger than the tubes in the vessel bottom, said tubes being closed at their lower ends and having their upper ends in fluid communication with the heat exchange liquid space;

a liquid feed distribution member surrounding each tube in the liquid feed box, said member being joined at a lower end to the vessel bottom around said oversized hole and means preventing liquid from flowing between the member upper end and the tube, said member having means which directs feed liquid, in the feed box, against the tube external wall and permits flow of liquid to the tube external wall only from said member;

means to deliver a liquid feed stream into the feed box; and

means to deliver a heat exchange liquid to the heat exchange liquid space and means to remove heat exchange fluid therefrom.

4,564,065

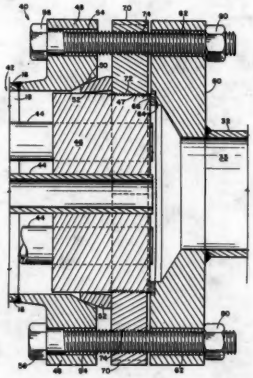
DUAL PURPOSE CLOSURE FOR HEAT EXCHANGES

Wf Roberts, 4731 S. Columbia Pl., Tulsa, Okla. 74105

Continuation-in-part of Ser. No. 551,573, Nov. 14, 1983. This application Aug. 17, 1984, Ser. No. 641,865
Int. Cl.[4] F28F *9/26*
U.S. Cl. 165—158 **1 Claim**

1. An end closure for a heat exchanger of the type having a

shell side enclosure and at least one tube within said shell, the closure comprising a shell flange attached to the end of said shell, a tube sheet encompassing said tube and situated within said shell adjacent said end, said tube sheet having peripheral threads, a tubular connection and a tube flange for said tubular connection, said tube flange in facing alignment with said shell flange, a thrust flange positionable between said shell flange and said tube flange, said thrust flange surrounding said tube sheet and including inner peripheral threads for interconnection with said tube sheet threads, means to seal between said



tube sheet and said shell side flange, and means to seal between said tube flange and said tube sheet, a plurality of axially aligned openings in said shell side, tube and thrust flanges to receive threaded connection bolts or studs to assemble said closure, said shell opening in said shell side flange and said tube flange being unthreaded and larger in diameter than said bolt, said opening in said thrust flange being threaded to match said threaded bolt, the head and nut for said bolt being outside said shell side flange and said tube flange whereby rotation of said bolt will apply compressive force of said thrust flange to said means to seal between said tube sheet and said shell side flange.

4,564,066

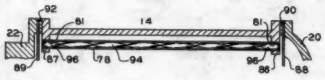
PERFORATE BEARING PLATE FOR TURBULATORS IN HEAT EXCHANGERS

Jeremy W. Gorman, 5 Cedar Hill Rd., West Simsbury, Conn. 06092

Continuation-in-part of Ser. No. 287,941, Jul. 29, 1981, abandoned. This application Aug. 9, 1983, Ser. No. 522,033

Int. Cl.⁴ F28F *13/02, 9/24, 13/12*

U.S. Cl. 165—158 **11 Claims**



1. In a heat exchanger, the combination comprising:

an assembly of an elongated shell and first and second end mounted bonnets closing the respective ends of said shell, said assembly having an inlet and an outlet for passage of a heat exchange fluid therethrough;

a plurality of elongated tubes mounted within said shell for external contact by a heat exchange fluid, each of said tubes having first and second ends, all of said first ends substantially abutting a common geometric plane, said geometric plane having disposed therein a header plate having holes therein for receiving said tubes and each of said tubes being adapted for passage of a heat exchange liquid therethrough in physical isolation from the heat exchange fluid;

a generally helical elongated blade disposed within each of said tubes for free rotation and free axial movement, each of said blades having first and second end portions and a laterally centered pointed portion on at least said one of said end portions thereof, said blades having a diameter relative to that of said tube associated therewith, such as to cause said blade to pass in closely spaced relation to the inside surface of said tube during rotation of said blade, each of said end portions of said blades being disposed within said one end of one of said tubes; and

a bearing member having a substantially planar perforate face disposed within one of said bonnets in abutting relation to said one end portion of said blades and disposed in spaced relationship to said one end of each of said tubes and said header plate and also disposed in substantially parallel relationship to said header plate, whereby passage of the heat exchange liquid through said tubes from said second end portions to said first end portions thereof will cause the blades disposed therein to rotate within said tubes with said one end portion bearing upon said bearing member, said blade disturbing any stagnant layer or laminar film of the heat exchange liquid that might otherwise tend to form adjacent said inside surface of said tube, and thus promoting efficient heat transfer between the heat exchange liquid and the heat exchange fluid.

4,564,067

WASTE-HEAT TANK

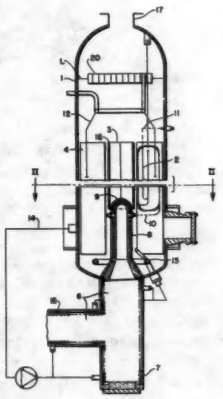
Ulrich Premel, Gummersbach, Fed. Rep. of Germany, assignor to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Feb. 23, 1983, Ser. No. 468,895

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1982, 3206511

Int. Cl.⁴ F28D *7/10;* **F22B** *1/18*

U.S. Cl. 165—163 **4 Claims**



1. A waste-heat tank which is constructed as a pressure tank, is charged with coolant, and is connected downstream of a pressure gasification, said waste-heat tank comprising in combination:

a cooled feed device which has a tube-fin-tube construction and includes an ash container; and

a gas/liquid heat exchanger having an operative connection with said feed device, said heat exchanger including tubular elements equal in overall length which serve as heat exchange surfaces and are installed into locations defined

by wall components; each tubular element being formed of a tube having an axis which is located to extend generally parallel to the container axis of said waste-heat tank, and each tube itself being guided in a winding manner; said feed device including a closed-top finger-like end portion which is coated with refractory material and which is far less thermally burdened to permit elimination of constructively costly and complex cooling thereof; said tubular elements of said heat exchanger respectively being provided with feed tubes which respectively open into said closed-top finger-like end portion to effect said operative connection of said heat exchanger with said feed device without having to cool said feed tubes of said tubular elements which serve as the heat exchange surfaces and as a result thereof stress and corrosion problems caused by temperature at the same time can be structurally and procedurally controlled, and at least one polygonal insert forming an inner space therewith as well as conduit-like chambers disposed about said space, each of said tubular elements of said heat exchanger being arranged in said conduit-like chambers provided therewith so that due to said heat exchange surfaces, which are constructed as tubular elements, in connection with said cooled feed device, length of said waste-heat tank can be reduced by one meter; diameter thereof can be reduced by about 5%; and weight thereof can be reduced by about 10%.

4,564,068

EMERGENCY RELEASE FOR SUBSEA TOOL

Benton F. Baugh, Houston, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Nov. 22, 1983, Ser. No. 554,209
Int. Cl.[4] E21B *23/06*
U.S. Cl. 166—123 **26 Claims**

1. A tool adapted for suspension from a drill string for running a casing hanger and a sealing assembly including a sealing member into a subsea wellhead, and for setting the sealing member in the annulus between the casing hanger and a surrounding tubular member by applying torque on the sealing assembly, comprising:

means for releasably attaching the casing hanger and the sealing assembly to the tool;

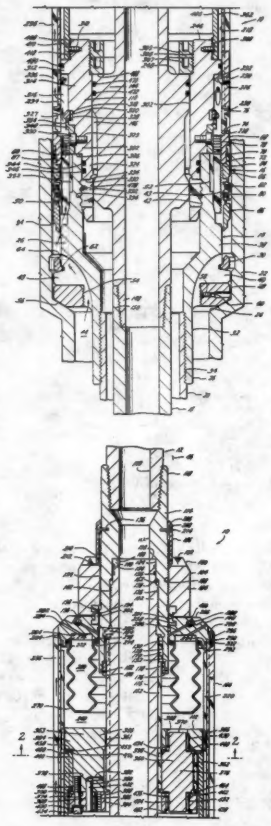
means for applying an axial compressive force on the sealing assembly and axially advancing the sealing member;

first means for releasing said releasably attaching means for disengaging the tool from the casing hanger, whereby the tool may be lifted up and removed to the surface in normal operations;

emergency release means for releasing said releasably attaching means for disengaging the tool from the casing hanger in the event said first means fail, whereby the tool may be lifted up and removed to the surface in emergency operations; and

wherein said means for applying an axial compressive force on the sealing assembly includes

means for receiving torque from the drill string; and



means for transmitting the torque to the sealing assembly to set the sealing member.

4,564,069

IN-PLACE WELLBORE CONSOLIDATION IN PETROLEUM RESERVOIRS USING SULFUR-OIL POLYMERS

Ian Rubinstein, and Raymond B. Woodford, both of Calgary, Canada, assignors to Exxon Production Research Co., Houston, Tex.

Filed Apr. 13, 1984, Ser. No. 600,272
Int. Cl.[4] E21B *33/138, 43/02*
U.S. Cl. 166—288 **18 Claims**

10. A method for reducing said production from an unconsolidated subterranean hydrocarbon formation penetrated by a wellbore while leaving said formation permeable to the flow of formation fluids, said method comprising (a) injecting steam carrying droplets of elemental liquid sulfur into said formation, (b) allowing said injected sulfur to react with hydrocarbon in said formation to produce a consolidating agent in said formation radially from said wellbore and thus (d) reducing said production during hydrocarbon production from said formation.

4,564,070
HYDROCARBON RECOVERY PROCESS USING AN IN SITU SILICATE/POLYMER GEL

Charles J. Norton, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 337,638, Jan. 7, 1982, abandoned. This application Nov. 25, 1983, Ser. No. 554,875
Int. Cl.[4] E02D *3/12*; E21B *33/138*
U.S. Cl. 166—295 16 Claims

1. A process for treating a porous earthen matrix with a silicate/polymer gel comprising the steps of:

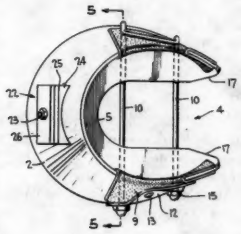
injecting into said matrix an undried, water-soluble; partially hydrolyzed polyacrylamide, a water-soluble silicate and a gelling agent selected from the group consisting of water-soluble strong acids and water-soluble salts of strong acids; and

reacting a mixture of said partially hydrolyzed polyacrylamide, silicate and gelling agent in said matrix to form said silicate/polymer gel in situ.

4,564,071
HORSE SHOE

James M. Lee, South Orange, N.J., assignor to Barrett F. Kalb, Roseland, N.J., a part interest

Filed Oct. 31, 1984, Ser. No. 666,992
Int. Cl.[4] A01L *3/00*
U.S. Cl. 168—19 10 Claims



1. A nailess reusable horse shoe comprising:

a molded polyurethane shoe having a substantially planar bottom and side walls extending upwardly from the outer edges of said bottom inclined at least at the frontal area from the front toward the rear to substantially conform with the inclination of the hoof;

said bottom and side walls extending from the frontal area rearwardly to form a substantially C-shaped cross-sectional configuration parallel to said bottom and open at the rear;

each side wall extending upwardly at least one half of the height of the hoof at the frontal part and having a downwardly sloping upper contoured edge toward the rear;

an opening in said bottom extending from the rear open end forwardly toward the front of said shoe and having a rounded front edge;

a rubber sole attached to the lower surface of said bottom;

at least one rod member extending below the upper surface of said bottom between said side walls;

retaining means on opposite ends of said at least one rod member engaging against respective surfaces of said side walls;

a clamping plate attached to and conforming with the outer surface of the side wall at one end of said at least one rod member to tension said at least one rod member;

a hole through said clamping plate through which said one end of said at least one rod member extends;

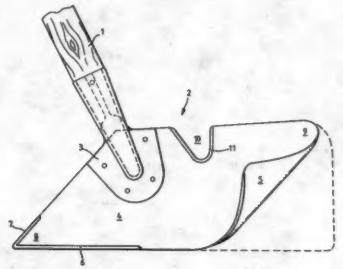
a screw thread on said one end of said at least one rod member; and

a threaded nut operatively engaging said screw thread to draw said side walls on opposite sides of said opening toward each other so that said shoe can be tightened in clamping engagement onto the hoof.

4,564,072
MULTI-PURPOSE GARDEN TOOL

Peter R. Corbett, Hayne Barton, Stowford, Lewdown, Devon, EX20 4BS, United Kingdom

PCT No. PCT/GB83/00180, § 371 Date Mar. 21, 1984, § 102(e) Date Mar. 21, 1984, PCT Pub. No. WO84/00470, PCT Pub. Date Feb. 16, 1984
PCT Filed Jul. 25, 1983, Ser. No. 596,457
Claims priority, application United Kingdom, Jul. 23, 1982, 8221276
Int. Cl.[4] A01B *1/20, 1/24*; A01G *3/06*
U.S. Cl. 172—13 3 Claims



1. A multi-purpose garden tool comprising a handle and a tool head carried at one end of said handle, wherein:

said tool head includes:

a substantially flat blade portion having first and second ends and a straight bottom cutting edge, said flat blade portion and said bottom cutting edge being in the same plane as said handle, said first end of said flat blade portion having a leading cutting edge extending upwards from said bottom cutting edge in said same plane,

and a soil deflecting portion provided at said second end of said flat blade portion and projecting from one side of said flat blade portion, said soil deflecting portion positioned to deflect soil to said one side of said flat blade portion as said flat blade portion is advanced forward along said bottom edge in a direction toward said leading cutting edge and a portion of said soil deflecting portion furtherest from said bottom cutting edge is formed as a scoop-like member which can be used to excavate soil; and said handle being inclined upwardly relative to said bottom edge and in a forward direction away from said soil-deflecting portion.

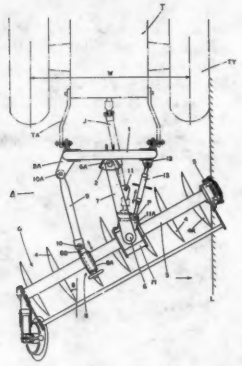
4,564,073
PLOW OR HARROW

Katsuyuki Ide; Masatoshi Yamada, both of Chitose, and Katsusuke Sasaki, Eniwa, all of Japan, assignors to Star Farm Machinery Mfg. Co., Ltd., Hokkaido, Japan

Filed Jul. 16, 1984, Ser. No. 631,159
Claims priority, application Japan, Jan. 17, 1984, 59-4981[U]
Int. Cl.[4] A01B *63/24*
U.S. Cl. 172—120 4 Claims

1. A plow or a harrow comprising a cultivator frame connected at an angle with respect to a direction of travel of a tractor through a parallel linkage mechanism including a center link and a left link to said tractor, a plurality of saucer-like disks set at an inclined angle with respect to the direction of travel of said tractor and carried by a rotary shaft disposed below said cultivator frame, said center link having a first bracket extended from a rear end thereof and a second bracket extended from a point forwardly spaced apart from said rear

end, and a connecting member having one end pivotably connected to said tractor and the other end connected selectively to said first or second brackets, the rear end of said left link



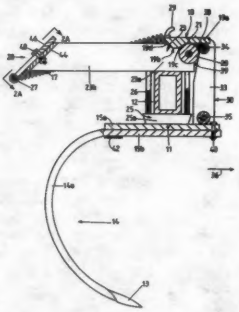
being connected to a disk angle adjustment device comprising a screw rod which can be extended and retracted in the direction of travel of said tractor.

4,564,074

AGRICULTURAL IMPLEMENT

Austin T. Ryan, 19 Hewitt St., Warracknabeal, Victoria, Australia

Filed Jul. 20, 1983, Ser. No. 515,938
Claims priority, application Australia, Jul. 30, 1982, PF5141
Int. Cl.[4] A01B *61/04*
U.S. Cl. 172—265 **22 Claims**



1. An agricultural implement comprising:

a support body;

a ground treatment tool depending from said support body;

means mounting said tool to said support body for pivotal movement upwardly and rearwardly from a work position;

roller means mounted to said support body and located above said tool mounting means with its axis generally horizontal;

a lever slidably resting on said roller means, said roller means providing a movable fulcrum for the lever;

means pivotally coupling said tool and said lever forwardly of said mounting means and said roller means; and

resilient biasing means connected between said support body and said lever, being connected to said lever behind the roller means and arranged to bias the tool to said work position;

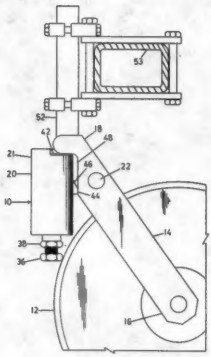
wherein as the tool retracts in response to a predetermined resistance to its forward movement through the ground, it pulls the lever across and about the roller means against the biasing means, resulting in relative movement of the fulcrum along the lever and consequent variation in the effective biasing force on the tool.

4,564,075

SPRING-LOADED TILLAGE IMPLEMENT

Carl J. Chekouras, 3207 Post Rd., Stevens Point, Wis. 54481

Filed Apr. 3, 1984, Ser. No. 596,410
Int. Cl.[4] A01B *61/04*
U.S. Cl. 172—572 **15 Claims**



1. A tillage implement for attachment to agricultural soil cultivation machinery adapted for use in soil including trash, the tillage implement comprising:

(a) a knee having a unitary knee body having means for attaching the knee to the agricultural machinery and a spring channel having a generally upwardly opening end, the spring channel including means for containing and substantially enclosing a spring, supporting it from below, and thus protecting it from becoming fouled with soil and trash;

(b) a longitudinally extended pivot arm having a downward end and an upward end, pivotably attached to the knee body at a point between the downward and upward ends, whereby the pivot arm may so pivot that the downward end moves between down and up positions such that the downward end is at positions respectively of greatest descent and assent;

(c) a tillage blade rotatably attached to the downward end of the pivot arm and adapted to roll over and engage the soil being cultivated; and

(d) a compression spring contained and supported within the spring channel, whereby it may be resiliently flexed by and resist the application of force from above, the spring having means for applying pressure directly to the pivot arm to bias the downward end thereof toward its down position.

4,564,076

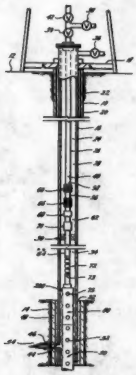
WELL COMPLETION METHOD AND APPARATUS

Roy R. Vann, Katy, Tex., and Emmet F. Brieger, Nogal, N. Mex., assignors to GEO Vann, Inc., Houston, Tex.

Filed Apr. 11, 1983, Ser. No. 483,478
Int. Cl.[4] E21B *43/185*
U.S. Cl. 175—4.52 **32 Claims**

1. An actuator apparatus for a perforating gun suspended on a pipe string below a packer in a well, the packer separating an upper well annulus from a lower portion of the well, comprising:

a first tubular body adapted for suspension on the pipe string above the packer;
the first tubular body having a first opening communicating with the upper well annulus;
a piston movably disposed within said first tubular body and movable within said first tubular body upon the creation of a pressure differential across said piston;
one side of the piston being subjected to fluid pressures in the upper well annulus by means of said first opening and another side of the piston being subjected to fluid pressures at the interior of said body;



a second tubular body attached to the perforating gun;
a firing pin movably disposed in said second tubular body and adapted for engagement with the perforating gun to detonate the gun;
a solid member extending between said first and second tubular bodies and connected to said piston and said firing pin for moving said firing pin to a firing position; and
said piston acting on said solid member to move said firing pin to said firing position in response to the pressure differential.

4,564,077

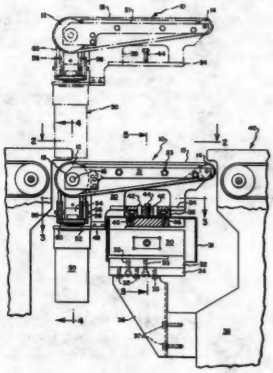
POWERED CONVEYING AND WEIGHING MACHINE

Victor Del Rosso, Ithaca, N.Y., assignor to Hi-Speed Checkweigher Co., Inc., Ithaca, N.Y.

Filed May 24, 1984, Ser. No. 613,438
Int. Cl.[4] G01G *19/00, 21/00, 23/00*
U.S. Cl. 177—145 **9 Claims**

1. A high speed operating motorized conveying and weighing or checkweighing machine for transporting and weighing articles in succession for use such as in between rapid article feeding and take-away conveyors and in conjunction with interim weight measuring and readings transmitting analog converting and print-out, visual display price-labeling of item price-calculated devices or the like; said machine comprising;

(a) a machine support member **(34)**;
(b) compression type strain gage transducer means **(30)** having a plan view longitudinally extended configuration mounted upon said support member **(34)**;
(c) an angularly configured structure including a bottom horizontal bracket portion **(24)** fixed upon a top portion of said transducer means **(30)** and a side wall portion **(20)** vertically upstanding from one edge of said bracket portion **(24)** and extending in parallel offset relation to the plan view longitudinal profile of said transducer means **(30)**, said side wall portion **(20)** having one end thereof longitudinally offset relative to said transducer means **(30)**;
(d) conveyor means **(10)** cantilever supported by said side wall portion **(20)** to extend in an overlying relation with the longitudinal profile of said transducer means **(30)**, said conveyor means **(10)** including a conveyor belt driving roller **(12)** keyed to axle means **(16)** which is rotatably mounted upon and extends in cantilever relation laterally away from said one end of said side wall portion **(20)**, a conveyor belt idler roller **(14)** rotatably carried by axle means **(22)** which is mounted upon and extends in cantilever relation horizontally away from an opposite end of said side wall portion **(20)** and endless conveyor belt means **(15)** training about said drive and idler rollers;



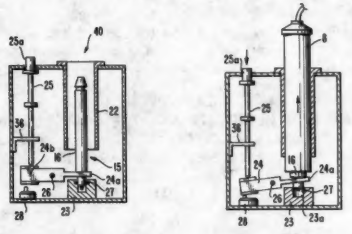
(e) a power supply unit **(50)** cantilever supported by said one end of said side wall portion **(20)** to underlie said conveyor means in longitudinally offset relation with said transducer means **(30)**; and
(f) power transmission means **(51)** operatively interconnecting said power supply unit **(50)** and said conveyor drive roller **(12)**, characterized in that said transducer means and said power supply unit and said power transmission means and said conveyor means are substantially congruent within a common plan-view profile which is of minimal width.

4,564,078

APPARATUS FOR STORING FELT PENS FOR AN ELECTRONIC BOARD

Shunji Enokido, Yokohama; Hideyuki Kodani, Kawasaki, and Hajime Ohta, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 16, 1984, Ser. No. 571,189
Claims priority, application Japan, Jan. 18, 1983, 58-005089[U]; Jan. 31, 1983, 58-012203[U]; May 9, 1983, 58-080505
Int. Cl.[4] G08C *21/00*
U.S. Cl. 178—18 **23 Claims**



1. An apparatus for storing felt pens, having tips, used for

marking an electronic board in an electronic board input system, comprising:

a case having a top and bottom;

a plurality of pen loaders positioned in said case, each of said plurality of pen loaders for storing a respective one of the felt pens when it is not being used and for loading a felt pen when it is to be used, each of said pen loaders comprising:

a cap positioned on the bottom of said case, said cap being adapted to enclose the tip of the corresponding felt pen in an airtight manner;

a guide sleeve extending into said case; and

a lever pivotally mounted to said case, said lever having a forked shaped end which is positioned between said cap and said guide sleeve, said forked shaped end of said lever lifting the felt pen in the corresponding one of said plurality of pen loaders in a direction towards the top of said case when a force is applied to the opposite end of said lever; and

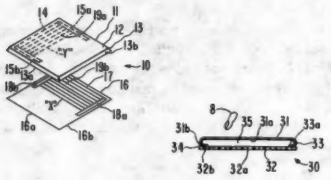
sensors respectively positioned adjacent the lever for each of said plurality of pen loaders, each of said sensors being activated in dependence upon movement of the corresponding lever to generate a signal indicating that the corresponding felt pen is in use.

4,564,079

DIGITIZER PAD

Cecil A. Moore, San Jose, Calif., and Gordon B. Langford, Glendale, Ariz., assignors to Koala Technologies Corporation, San Jose, Calif.

Filed Jul. 30, 1984, Ser. No. 635,381
Int. Cl.[4] G08C *21/00*
U.S. Cl. 178—18 **10 Claims**



1. In a digitizer pad having two or more spaced parallel sheets having at least two electrically-isolated facing surfaces, said pad having at least ten electrical input points per square inch on said facing surfaces, adapted to be brought into point contact when pressed by a stylus or human operator finger, the improvement comprising:

a top flexible sheet depressible by stylus or finger force;

a substantially inflexible bottom sheet;

a energy-storing flexible hinge means attached to and extending between peripheral edge portions of said top sheet and said bottom sheet for normally electrically separating said sheets, depression of said top sheet causing energy to be stored in said hinge means; and

wherein stored energy in said hinge means is released by cessation of said stylus or finger force for returning said sheets into electrical separation at said point contact.

4,564,080

INVALID'S WHEELCHAIR AND LIKE CONVEYANCES

Jeffery M. Pagett, Griffith, Australia, assignor to Australian Transcenders International Pty. Ltd., Australia

Filed Jan. 27, 1983, Ser. No. 461,654
Int. Cl.[4] B62D *55/04*
U.S. Cl. 180—8.2 **14 Claims**

1. A conveyance comprising:

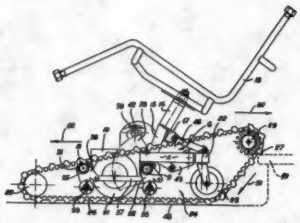
a chassis frame,

an upright support column pivoted by its lower end on said frame for fore-and-aft swing movement relative to said frame,

a load carrier mounted on the upper end of said column,

road wheels, whereof at least some of motor-driven, borne on said frame and providing the conveyance with a first wheel-base for movement over substantially level travel surfaces,

two carrier-plates respectively placed at the sides of said frame and each carrying a motor-driven crawler belt the two of which define a second wheel-base for movement over substantially inclined travel surfaces,



mounting means whereby said carrier-plates may be translationally movable in unison thereby to bring one of said wheel-bases into travel surface contact to the exclusion of the other of said wheel-bases, and

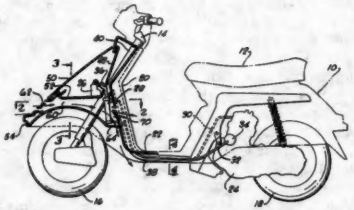
linkage mechanism coupling said support column and said mounting means whereby the angular disposition of said column is varied by a predetermined amount with respect to said chassis frame, upon operation of said mounting means.

4,564,081

MOTORCYCLE COOLING SYSTEM

Masumi Hamane; Takanori Onda, and Masayoshi Baba, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1983, Ser. No. 530,994
Claims priority, application Japan, Sep. 11, 1982, 57-158382
Int. Cl.[4] B60K *11/04*
U.S. Cl. 180—229 **8 Claims**



3. A motorcycle having a front leg shield, a step floor and an engine mounted behind the step floor, comprising

a radiator mounted at the front leg shield;

tubes extending from said radiator, below the step floor and to the engine;

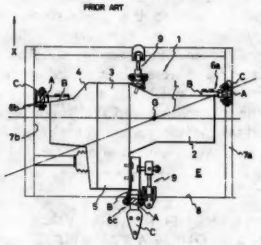
side channels supporting the step floor, said tubes being positioned to extend beneath the step floor in said side channels.

4,564,082

STRUCTURE FOR SUPPORTING A POWER UNIT FOR A VEHICLE

Shin Takehara, Zama, and Toshiyuki Tabata, Sagamihara, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 31, 1983, Ser. No. 528,151
Claims priority, application Japan, Sep. 1, 1982, 57-152130
Int. Cl.[4] B60K 5/12
U.S. Cl. 180—312 **12 Claims**



1. A structure for supporting a power unit for a vehicle of front-engine and front-drive type wherein said power unit comprises an engine proper disposed transversely of the vehicle body, and a transmission housing having a transmission gear train received therein, said transmission housing connected with said engine proper in a direction which is transverse of the vehicle body, said structure comprising:

first supporting means provided on the engine proper side of said power unit on the principal axis of inertia of said power unit and which supports said power unit on a first longitudinal side member; and

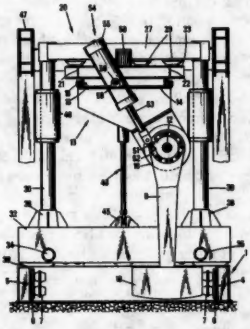
second and third supporting means provided on the transmission side of said power unit at two positions in opposed relation to each other respective to the principal axis on a second longitudinal side member.

4,564,083

DEVICE FOR GENERATING ACOUSTIC SHEAR WAVES IN THE EARTH

Pierre-Claude Layotte, Les Mathes; Jacques Cholet, L'Etang-la-Ville; Pierre Grolet, Orgerus, and Roland Huin, Montesson, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jul. 19, 1983, Ser. No. 515,245
Claims priority, application France, Jul. 19, 1982, 82 12696
Int. Cl.[4] F16H 33/00; G01V 1/147
U.S. Cl. 181—114 **8 Claims**



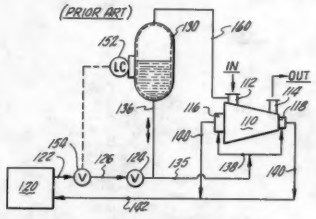
1. A device mounted on a vehicle frame for generating acoustic shear waves in the earth, comprising a target member having an earth coupling surface, an upwardly facing surface, and at least one inner facing wall forming a lateral striking surface substantially perpendicular to said coupling surface; a mass for striking the target-member, a platform for supporting the mass, a rigid arm pivotable with respect to the platform for supporting the mass and guiding the fall of the mass along a circular trajectory towards said lateral striking surface, and operating means for lifting the mass by pivoting the rigid arm with respect to the platform from a lower position where the mass is in contact with the striking lateral surface to an upper position wherefrom the fall is initiated; a rigid cage comprising an assembly for supporting the platform, four vertical columns and a lower frame having downwardly facing surfaces and vertically extending surfaces the target-member being connected through deformable coupling means disposed between the target-member and both the downwardly facing walls and vertical walls to the lower frame of the rigid cage and being displaceable with respect to the vehicle frame from a position where the target-member is in contact with the earth to a lifted position, the assembly for supporting the platform also supporting the associated pivoting arm, and rigid arm operating means; an axle about which the arm pivots being secured to the platform so that the mass, in the lower position of said arm, comes into contact with the inner striking surface; the sizes of the rigid arm, of the platform and of the operating means being selected so as to maintain the displacements of the mass within a space defined by the cage and the vehicle frame and two hydraullic jacks disposed between the vehicle frame and cage for displacing the cage and target member with respect to the vehicle frame.

4,564,084

METHOD AND APPARATUS FOR CONTROLLING THE TEMPERATURE OF OIL IN AN OVERHEAD TANK

Bruce G. Heckel, Level Green, Pa., assignor to Elliott Turbomachinery Co., Inc., Jeannette, Pa.

Filed Mar. 22, 1984, Ser. No. 592,130
Int. Cl.[4] F01M 5/00
U.S. Cl. 184—6.11 **8 Claims**



1. An oil delivery system for supplying oil to seal a portion of a turbomachine having a pressurized fluid flowing therethrough which comprises:

an oil supply means for supplying oil under pressure to the turbomachine and for receiving oil from the turbomachine;

first conduit means connecting the oil supply means to the turbomachine;

second conduit means connecting the turbomachine to the oil supply means;

a tank a least partially filled with oil and connected at a first location by a discharge line to the first conduit means and mounted at an elevation sufficiently above the turbomachine that oil may be routed from the tank through the discharge line and first conduit means to the turbomachine at a pressure higher than the pressure of the fluid received by the turbomachine; and

means for altering the temperature of the oil in the tank to approximate the operating temperature of the oil in the oil

delivery system including a supply line connected between the first conduit means and a second location on the tank for routing a portion of the oil flowing from the oil supply means through the supply line, through the tank and through the discharge line to the turbomachine whereby oil from the supply means is mixed with the oil in the tank to maintain the temperature of the oil in the tank similar to the temperature of the oil discharged from the oil supply means.

5. A method of maintaining a reliable alternate source of oil using a tank positioned vertically above a turbomachine while maintaining the desired relative pressure of the oil supplied from the tank, said tank being a portion of an oil delivery system for supplying oil to seal a portion of the turbomachine and including an oil supply means for supplying oil under pressure and for receiving oil, first conduit means for conducting oil from the oil supply means to the turbomachine, second conduit means for conducting oil from the turbomachine to the oil supply means and a discharge line connecting the tank at a first location to the first conduit means which comprises the steps of:

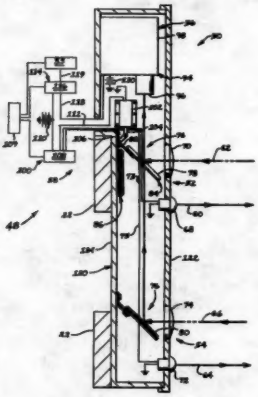
regulating the temperature of the oil in the tank to maintain the desired oil flow characteristics which includes routing a portion of the oil discharged from the oil supply means to the first conduit means to the tank at a second location, passing said oil through the tank to mix with the oil in the tank to maintain the temperature of the oil in the tank similar to the temperature of the oil supplied and discharging oil from the tank through the discharge line connected to the tank at the first location.

4,564,085

CONTROLLING ARRANGEMENT

Grant C. Melocik, Chardon, and John E. Wible, Painesville, both of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Filed Jan. 22, 1985, Ser. No. 693,415
Int. Cl.[4] B66B 9/20
U.S. Cl. 187—9 R **13 Claims**



1. A controlling arrangement, comprising:

a signal assembly having first and second spaced apart portions, said first portion being adapted to deliver a first signal and receive a reflection of said first signal, and said second portion being adapted to deliver a second signal and receive a reflection of said second signal;

said first signal assembly portion having a first source of light and a first lens, and said second signal assembly portion having a second source of light and a second lens, said first signal being a light beam delivered from the first source of light and said second signal being a light beam delivered from the second source of light, said first lens being adapted to receive a reflection of the first light beam and said second lens being adapted to receive a reflection of the second light beam, said lenses each being adapted to pass the received light beam reflection;

a single sensing device adapted to receive the reflected signals from each of said first and second signal assembly portions and deliver a control signal in response thereto;

means for selectively actuating one of the first and second portions of said signal assembly;

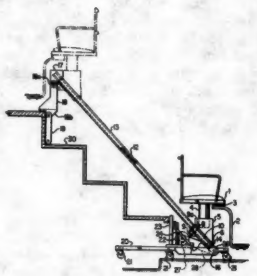
means for directing the reflected signals received by the first and second portions to the single sensing device, said directing means includes a first mirror positioned between the first lens and said single sensor, said first mirror being adapted to direct reflected light passed by the first lens to said single sensing device, and a second mirror positioned between the second lens and said single sensing device, said second mirror being adapted to direct reflected light passed by the second lens to said single sensing device.

4,564,086

TRANSPORT SEAT FOR CONVEYING DISABLED TRAVELLERS THROUGH A STAIRWELL OPENING OF A PASSENGER CARRYING VEHICLE

John C. Kingston, 261 Cooper St., Suite 1210, Ottawa, Ontario, Canada (K2P 0G3)

Filed Oct. 28, 1983, Ser. No. 546,300
Claims priority, application Canada, May 4, 1983, 427379
Int. Cl.[4] B66B 9/08
U.S. Cl. 187—12 **15 Claims**



1. A portable conveyance device having a seat moveably mounted thereon for loading and unloading disabled travellers through a stairwell of a passenger carrying vehicle, said device comprising:

(a) a support base carried by rollers for freely rolling the device from one location to another on a passenger loading platform, said support base being stable on said passenger loading platform when located exteriorly of said vehicle stairwell;

(b) an elongate boom section pivotally connected at one end thereof to said support base and projecting outwardly therebeyond terminating in an opposite free outer end having connected thereto a boom-head, said boom section projecting from said base in a direction toward the interior of said vehicle over said stairwell when in use with said support base on said loading platform;

(c) carriage means mounted on said boom section for reciprocal movement therealong in a direction from one end toward the other;

(d) means for reciprocally moving said carriage means along said boom section;

(e) a seat rotatably mounted on said carriage means and located on a side of said boom section opposite said stairwell;

(f) seat angle adjustment means for selectively setting the horizontal attitude of said seat on said carriage;

(g) support means connected to said opposite free outer end of said boom section for supporting the same from at least one of a floor of said vehicle and a stair tread of said stairwell during transport of a traveller through said stairwell by said device;

(h) means on said base selectively operable to prevent rolling movement of the same for maintaining said conveyance device in a fixed position on said loading platform during loading and unloading of travellers; and

(i) locking means selectively operable preventing pivotal movement of said boom when said carriage means is at a position in the vicinity of said base whereby, when operated, the boom section is cantilevered from the base and wholly supported thereby.

4,564,087

DOUBLE PANEL SLIDING DOOR, ESPECIALLY FOR ELEVATORS

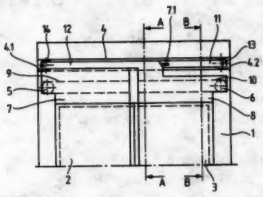
Max Haas, Kriens, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland

Filed Mar. 28, 1983, Ser. No. 479,656

Claims priority, application Switzerland, Apr. 2, 1982, 2040/82

Int. Cl.[4] B66B *13/30*; E05D *15/08*

U.S. Cl. 187—56 **2 Claims**



1. A double panel sliding door for a transportation system, especially for passenger and cargo elevators and the like, having a door frame, comprising:

a pair of panels;

a panel suspension and guiding arrangement provided for each panel of said pair of panels;

at least one of said panel suspension and guiding arrangements comprising:

a fixedly positioned roller mounted at the door frame;

a guide rail movable in conjunction with a related one of said pair of panels;

said movable guide rail being displaceable over said fixedly positioned roller;

an arm carried by said related panel;

a movable roller mounted at an end of said arm;

a fixed guiding rail mounted at the door frame and provided with two opposite rail parts between which said movable roller is displaceable;

said pair of panels are each provided with substantially identical door panel suspension and guiding arrangements;

said pair of panels being slidable in opposite directions;

each said arm of each panel carrying the related movable roller being reversed in orientation from one panel to the other; and

said fixed guiding rails of said pair of panels jointly defining a continuous single guiding rail for said movable rollers.

4,564,088

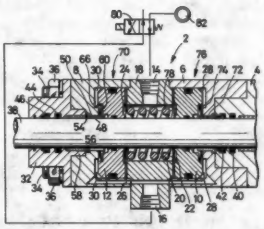
AXIAL BRAKING DEVICE

Mikio Takahashi, and Motoichi Nakayama, both of Toyota, Japan, assignors to Kyoho Machine Works, Ltd., Aichi, Japan

Filed Jan. 9, 1984, Ser. No. 569,452

Int. Cl.[4] B65H *59/10*

U.S. Cl. 188—67 **9 Claims**



1. An axial braking device for arresting a relative movement between bearing means, and a shaft member slidably engaging the bearing means and movable axially thereof relative to the bearing means, said axial braking device comprising:

a cylinder which is disposed immovably along an axis thereof relative to said bearing means, and through which said shaft member extends along said axis;

first and second braking means associated with said cylinder for braking said shaft, said first and second braking means being substantially identical and disposed symetrically relative to each other on opposite sides of a plane perpendicular to the axis of the shaft member, each of said first and second braking means including

an annular piston having a central bore to define an inner surface thereof and received within said cylinder, said annular piston engaging said cylinder fluid-tightly and slidably at an outer surface thereof and further engaging said shaft member fluid-tightly and slidably at said inner surface;

a cylindrical brake shoe having at least one slit formed axially thereof and through a wall thickness thereof, and radially contractible, said cylindrical brake shoe slidably engaging said shaft member and being disposed immovably relative to said cylinder along said axis thereof;

a radial clamp member of generally coned disc shape made of a resilient material, and engaging the outer surface of said cylindrical brake shoe, said radial clamp member being compressible in a direction along the axis of said cylinder by said annular piston and thereby reduced in inside diameter thereof so as to radially force the inner surface of said cylindrical brake shoe against the outer surface of said shaft member;

piston drive means for moving the annular pistons of said first and second braking means along the axis of said shaft member, said piston drive means comprising a spring which is interposed between the annular pistons of said first and second braking means to bias said annular pistons in opposite directons away from each other along said axis so as to cause axial compression of the respective radial clamp members, and further comprising a pressurized-fluid supply device for effecting a controlled selective supply of a pressurized fluid to said cylinder, said pressurized-fluid supply device having an operating position for moving said annular pistons against a biasing force of said spring and thereby releasing said radial clamp members from said axial compression by said annular pistons, and a non-operating position for applying a brake to said shaft member through the cylindrical brake shoes; and

a brake releasing device comprising a single lock screw which is threaded in one of said cylinder and a member fixed thereto, in a direction perpendicular to the axis of

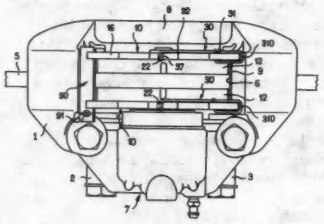
said shaft member, said brake releasing device further comprising a lock member which is disposed between opposed ends of said annular pistons and is connected to said lock screw so that the lock member is movable in said perpendicular direction to a locking position upon rotation of said lock screw in one direction, said lock member having tapered surfaces which slidably contact mating tapered surfaces of said annular pistons formed at said opposed ends thereof when said lock member is moved to said locking position, said lock member thereby forcing said annular pistons to move toward each other against the biasing force of said spring, and locking said annular pistons in their brake-releasing positions to keep said radial clamp members free from said axial compression to release said shaft member regardless of the operating and non-operating positions of said pressurized-fluid supply device.

4,564,089

FRICTION-ELEMENT ASSEMBLY EQUIPPED WITH AN ANTI-NOISE SPRING FOR A DISC BRAKE

Jean-Louis Gérard, Paris, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Dec. 2, 1983, Ser. No. 557,559
Claims priority, application France, Dec. 23, 1982, 82 21684
Int. Cl.⁴ F16D *55/224, 65/12;* F16F *15/06*
U.S. Cl. 188—73.38 **2 Claims**



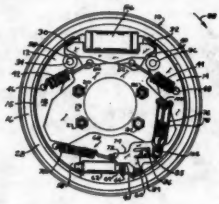
1. A friction-element assembly equipped with an anti-noise spring, the friction-element incorporating a lining-support plate intended to cooperate in anchoring and sliding engagement with dihedral guide surfaces of a torque support member of a disc brake by means of notches formed in the lateral edges of the support plate, the support plate incorporating, at a level of at least one of said notches, an aperture formed in an adjacent transverse edge for fitting of the anti-noise spring, said aperture and an adjacent one of said notches forming a neck prolongated outwardly by a widened lug part, the spring comprising an elastic wire and having an end part in the form of a closed loop engaged around the neck part to bear normally by means of a central part against a bearing zone of the aperture, the loop being prolongated by a strand portion provided at an end opposite the loop with means for fitting on a central zone of the lining support plate, characterized in that the lining support plate has, at a level of the central zone, a single through-orifice receiving therethrough a transversely bent end of said strand portion of said spring, the closed loop comprising an orthogonally bent end of the central part extending over and engaging the elastic wire and a radially inwardly bent nose portion at an end of said loop, the length of said strand portion being greater than a distance between said orifice and an adjacent end of said lug part limiting the aperture for the spring, and the length of said strand portion being less than a distance between the orifice and a bottom portion of said aperture delimiting said neck part laterally, the end of said strand portion opposite the loop forming the transversely bent end which is received in the orifice of the plate and extends to an orthogonally bent end portion located on a side of the support plate opposite a side along which said strand portion extends.

4,564,090

SELF-CENTERING BRAKE ASSEMBLY INCORPORATING A BRAKE DRUM AND AUTOMATIC ADJUSTING MECHANISM

Robert Spaargaren, Granger, Ind., assignor to Allied Corporation, Morristown, N.J.

Filed Dec. 29, 1983, Ser. No. 566,857
Int. Cl.⁴ F16D *51/14*
U.S. Cl. 188—331 **10 Claims**



1. A self centering brake assembly incorporating a brake drum and an automatic adjusting mechanism which maintains centered relation of the brake in reference to the brake drum, comprising:

A torque spider consisting of two torque plates disposed in flat face-to-face engagement at their inner brake mounting surfaces and axially spaced apart at their outer peripheral portions;

a primary brake shoe and a secondary brake shoe each having a friction material lined rim and a web loosely fitted between the torque plates at their outer periphery and forming a shoe ring;

a moveable anchor secured one to each of the expandable shoe ends and engageable with complementary anchoring seats provided by outer peripheral portions of said torque plates;

a wheel cylinder for expanding the actuated ends of said shoes; and,

an automatic adjuster for extending the distance between the articulated shoe ends responsively to shoe overtravel; characterized in that the automatic adjuster consists of a serrated adjuster wheel, an adjuster lever pivotally mounted on the secondary shoe and having a pawl which engages successive teeth of the adjuster wheel, an adjuster lever return spring fastened between the primary shoe and the adjuster lever, a solid form link and overtravel spring connected between the adjuster lever and torque plate and disposed so that it develops a force of such magnitude on the adjuster lever and shoes and along a force line to create together with the force exerted by the adjuster lever return spring a net balance of all said forces exerted on the shoes about their anchors whereby the shoe ring when the brake is unactuated will remain centered at all phases of adjustment in relation to the surrounding brake drum.

4,564,091

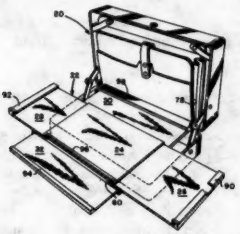
WRITING BOARD

August F. Coneglio, 8083 Rollingbrook Rd., Sagamore Hills, Ohio 44067

Filed Jun. 16, 1983, Ser. No. 504,815
Int. Cl.⁴ A45C *3/02*
U.S. Cl. 190—11 **20 Claims**

1. A portable writing board accessory for use with a briefcase and elsewhere including a main panel assembly having a pair of internal planar passages extending in planes parallel to

the plane of the main panel assembly and in directions normal to each other, and four auxiliary panels telescopically received



in said passages, each of said passages receiving a pair of said auxiliary panels for movement in opposite directions.

4,564,092

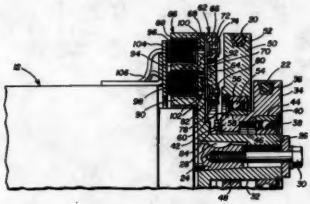
TWO SPEED, TWO PULLEY COMPRESSOR DRIVE CLUTCH

William C. Pierce, Carrollton, Tex., assignor to Pitts Industries, Inc., Dallas, Tex.

Filed Dec. 15, 1983, Ser. No. 562,193

Int. Cl.⁴ F16D *27/02*

U.S. Cl. 192—48.2 **7 Claims**



1. An electromagnetic clutch for driving an input shaft of a compressor in an air conditioning system of a bus or similar vehicle by connecting the input shaft to an output shaft of an internal combustion engine subject to frequent periods of low rotational output speed and high rotational output speed with the clutch providing approximately constant drive speed to the air conditioning compressor for efficient cooling, said clutch comprising a pair of pulleys with one pulley having a diameter larger than the other, a rotor having a hub connected with the input shaft of the air conditioning compressor, a pair of armature disposed in close axially spaced relation to one side of the rotor, means connecting the armatures to the larger and smaller diameter pulleys and enabling axial movement of the armatures into driving engagement with the rotor and a pair of coil assemblies supported stationarily adjacent the rotor in opposed relation to the armatures for selectively moving the armatures into driving engagement with the rotor for transferring driving force from selective pulleys to the rotor and input shaft of the air conditioning compressor to enable substantially constant input speed to the air conditioning compressor when the vehicle engine speed varies considerably.

4,564,093

FLUID FRICTION CLUTCH

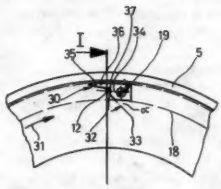
Werner Storz, Benningen, Fed. Rep. of Germany, assignor to Süddeutsche Kühlerfabrik Julius Fr. Behr GmbH & Co KG, Stuttgart, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 510,197

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1982, 3226634

Int. Cl.⁴ F16D *35/00*

U.S. Cl. 192—58 B **14 Claims**



1. A fluid friction clutch comprising: primary part means having a driving disk; secondary part means defining a housing;

bearing means rotatably supporting said primary and secondary means for relative rotation;

intermediate wall means separating said housing into a working space and a clutch fluid storage space, said driving disk being disposed in said working space;

at least one return bore means in said intermediate wall means for accommodating return of clutch fluid from the working space to the storage space; and

damming body means disposed adjacent each of the return bore means for guiding return flow of clutch fluid to said return bore means, said damming body means exhibiting a fluid guide surface facing the rotational direction of the driving disk, said fluid guide surface including a first portion disposed radially inwardly of the return bore means which extends diagonally radially inwardly and in the driving disk rotational direction and a second portion disposed radially outwardly of the return bore means which extends diagonally radially outwardly and opposite the driving disk rotational direction, whereby the configuration of the fluid guide surface assures an improved temperature responsive control of the rotational speed of the secondary means.

4,564,094

FLUID FRICTION CLUTCH

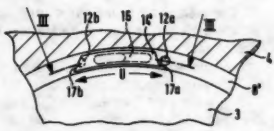
Werner Storz, Benningen, Fed. Rep. of Germany, assignor to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG, Fed. Rep. of Germany

Filed Nov. 12, 1982, Ser. No. 440,946

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1981, 3147797

Int. Cl.⁴ F16D *35/00, 43/25*

U.S. Cl. 192—58 B **18 Claims**



1. A fluid friction clutch comprising:

a primary part having a driving disk,

a secondary part defining a housing, bearing means rotatably

supporting said primary and secondary part for relative rotation,

an intermediate disk means separating said housing into a working space and a clutch fluid storage space,

said driving disk being disposed in said working space,

return bore means for accommodating return of clutch fluid from the working space to the storage space, and

baffle means for damming-up the fluid adjacent the return bore means to increase the return flow pressure of the fluid,

wherein said baffle means is supported at a guide in the intermediate disk means to be movable within limits in the circumferential direction while being fixed in the radial direction,

wherein said intermediate disk means is fixed to said housing,

wherein the guide is formed as an elongated circumferentially extended oblong hole through said intermediate disk means, and

wherein the baffle means is provided with a guidance part which protrudes through the oblong hole and extends beyond the surface of the intermediate disk means in the direction of the storage space, and wherein the baffle means is axially secured to the intermediate disk means by gripping means at the storage space side of the intermediate disk means.

4,564,095

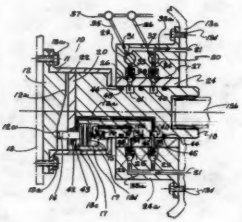
FRICTION-LESS HYDRAULIC CLUTCH DEVICE

Darrell D. Lackey, Detroit, Mich., assignor to Febco Inc., Livonia, Mich.

Filed Jan. 23, 1984, Ser. No. 572,709

Int. Cl.[4] F16D *31/02*

U.S. Cl. 192—59 **1 Claim**



1. A hydraulic clutch for an engine having a rotatable engine output shaft comprising

a fluid reservoir,

a cam secured to the output shaft of said engine,

a fixed clutch housing,

a rotatable clutch output shaft, journaled in said clutch housing,

a cylinder in said clutch output shaft,

a piston in said cylinder having a front side and a rod side,

a piston rod extending from the rod side of said piston and engageable with said cam to effect reciprocation of said piston within said cylinder upon rotation of said engine output shaft relative to said clutch output shaft,

an annular torque application groove in said clutch output shaft,

first hydraulic passage means in said clutch output shaft communicating with said torque application groove and with the face of said piston,

an annular torque release groove in said clutch output shaft,

second hydraulic passage means in said clutch output shaft communicating with said annular torque release groove and with the rod side of said piston,

third hydraulic passage means in said clutch housing communicating with each of said torque application and torque release grooves and with said hydraulic fluid reservoir,

a pair of one-way fluid check valves in said third hydraulic passage means for admitting fluid to said first and second hydraulic passage means from said reservoir but precluding flow of fluid back to said reservoir,

fourth hydraulic passage means in said clutch housing communicating with each of said torque application and torque release grooves and with said hydraulic fluid reservoir,

a torque application fluid flow control valve in said clutch housing between and communicating with said torque application groove and fourth hydraulic passage,

a torque release fluid flow control valve in said clutch housing between and communicating with said torque release groove and fourth hydraulic passage, and

linkage means connecting said torque application and release control valves so as to close said torque release valve upon opening of said torque application valve and open said torque release valve upon closing of said torque application valve thereby to control reciprocation of said piston and relative rotation between said engine output shaft and said clutch output shaft.

4,564,096

DISENGAGEABLE ROTARY CLUTCH

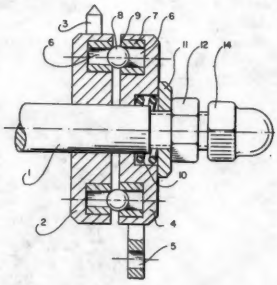
Kurt Neumann, Buxtehude, Fed. Rep. of Germany, assignor to Claudius Peters, Fed. Rep. of Germany

Filed May 6, 1983, Ser. No. 492,387

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1982, 3236926

Int. Cl.[4] F16D *1/00, 11/00, 23/02;* F16L *23/00*

U.S. Cl. 192—67 R **5 Claims**



1. A mechanically actuatable rotary clutch for rotating a driven shaft in response to a drive means, the clutch comprising:

a first clutch flange having a device for connection to the drive means;

a second clutch flange is fixedly mounted on the driven shaft, the first clutch flange is also mounted on the driven shaft coaxial with the second clutch flange, the second clutch flange is capable of being rotated together with or relative to the first clutch flange;

rolling means are positioned between the two clutch flanges, each clutch flange is provided with opposed recesses into which the rolling means is received the recesses are provided with circumferential inclined surfaces wherein the rolling means cooperates with the circumferentially inclined surfaces of the opposed recesses;

a rigid locking element including a nut and a means for directly abutting the first clutch flange in a locking position for forcing and locking the first clutch flange and the rolling means against the second clutch flange for directly transferring movements initiated by the drive means to the second clutch flange and rotational movement to the driven shaft; and

a spring means for pressing the clutch flanges together when

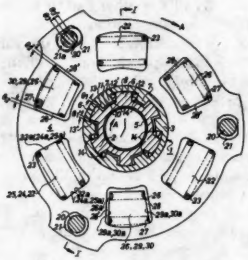
the rigid locking element is released from the locking position for forcing and locking the clutch flanges together.

4,564,097

CLUTCH DISC

Yoshiaki Kabayama, Kadoma, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Filed Dec. 27, 1983, Ser. No. 566,114
Claims priority, application Japan, Dec. 28, 1982, 57-197234
Int. Cl.⁴ F16D *3/64*
U.S. Cl. 192—106.1 **5 Claims**



1. A clutch disc comprising a hub means having an inner hub adapted to be connected to a shaft and provided with outer teeth and an outer hub having a flange and a corresponding number of inner teeth meshing with the outer teeth of inner hub wherein circumferential spaces are formed therebetween; weak elastic means disposed in at least one of the circumferential spaces to circumferentially connect the outer and inner teeth together, and the other circumferential spaces in which the weak elastic means are not disposed having a circumferentially shorter length than the circumferential spaces for the elastic means so that the elastic means may be prevented from being fully compressed; stopper means for preventing both hubs from relative axial movement and preventing the elastic means for dropping out of the circumferential spaces; a pair of side plates disposed at both sides of the flange and connected to a torque input member; and strong elastic means for connecting the side plates to the flange.

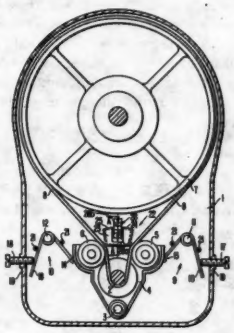
4,564,098

DRIVE ASSEMBLY FOR DOOR OPERATOR

Michael Hörmann, Steinhagen, Fed. Rep. of Germany, assignor to Hormann KG, Harsewinkel, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 162,088, Jun. 23, 1980, abandoned. This application Jun. 9, 1982, Ser. No. 386,581
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1979, 7917854[U]; Jun. 10, 1981, 8117194[U]; Feb. 3, 1982, 8202713[U]
Int. Cl.⁴ E05F *15/16, 15/20;* F16P *5/00*
U.S. Cl. 192—150 **32 Claims**

1. A door operator drive assembly comprising an electric drive motor mechanically connected to a door pulling means by a transmission in the form of a drive belt, the drive belt being movably supported on three pulleys and being in driven association with a motor output shaft, two of said pulleys being belt guide pulleys mounted on opposite sides of the motor output shaft on a plate which is swingable on a shaft that extends parallel to the motor output shaft so that the belt passes between the said two of the pulleys and about an output pulley, forming the third of said three pulleys, for driving a chain, and the plate being elastically loaded toward a middle position of its range of swingable movement and being provided with an extension means, extending to a position adjacent a switching arrangement located in the plate swinging range, for actuation thereof upon swinging of said plate from said middle position in response to deviations of application pressure of said drive belt on said belt guide pulleys sufficient to overcome said elastic loading, wherein adjusting means are provided for adjusting the elastic loading on said plate and wherein said



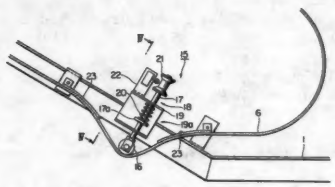
extension means comprises a shield which penetrates a beam path between a transmitter and a receiver of a switching arrangement in the form of a photoelectric cell during said swinging of the plate from said middle position.

4,564,099

SAFETY DEVICE FOR A PASSENGER CONVEYOR

Akira Uozumi, Ichinomiya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1983, Ser. No. 557,363
Claims priority, application Japan, Jan. 25, 1983, 58-10126
Int. Cl.⁴ B65G *43/00*
U.S. Cl. 198—323 **3 Claims**



1. A safety device for a passenger conveyor having a main frame, sprockets at the upper and lower parts of the main frame, endless tread board chains reeved on said sprockets, tread boards connected to said endless tread board chains, endless handrails loosely circulatingly driven along with said tread boards, a driving means for said endless board chains, and handrail driving rollers driven by said driving means and frictionally engaging said handrails in frictional contact for driving said handrails, said safety device comprising:

a stationary member on said main frame;

thrust means corresponding to each of said handrails and shiftably held on said stationary member and having the forward end portion directed toward and engaging the inside of the corresponding one of said handrails;

a tension application means engaged with said thrust means for applying tension to said one of said handrails through said thrust means;

a detecting means engageable by said thrust means for detecting a shift of said thrust means beyond predetermined limits; and

a pair of guide means on said main frame and extending along the inside of said one of said handrails on opposite sides of said thrust means and being curved concavely outwardly of said stationary member for positively guid-

ing said one of said handrails therealong, and having free ends spaced from each other and the said one handrail being bent freely between said free ends with said forward end portion of said thrust means engaging the bent portion of the one handrail between said free ends, and said free ends being freely movable toward and away from each other with changes in tension in said handrail, whereby said thrust means is positively shifted even for a minor change in the tension of said handrail and any shift of said thrust means beyond the predetermined limits is surely detected.

4,564,100

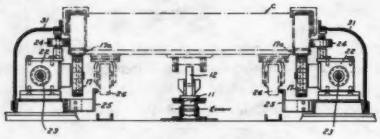
CARRIER CONVEYOR SYSTEM

Edward E. Moon, Grosse Pointe Woods, Mich., assignor to Acco Babcock Inc., Fairfield, Conn.

Filed Jun. 23, 1983, Ser. No. 507,054

Int. Cl.[4] B65G *43/08, 13/06*

U.S. Cl. 198—341 **22 Claims**



1. A carrier conveyor system comprising

a main conveyor,

a plurality of carriers positioned in closely spaced relation on said main conveyor,

said main conveyor having means in closely spaced relation for engaging and moving said carriers,

a work station at which a carrier is to be stopped to perform a work function,

said main conveyor having a first portion in advance of the work station and a second portion beyond the work station,

means defining a first track associated with the first portion of the main conveyor along which the carriers are movable,

means defining a second track associated with the second portion of the main conveyor along which the carriers are movable,

means associated with the first track and first portion of the conveyor for successively disengaging the carriers from the first portion at the end of the first portion and disengaging the carriers relative to the first track,

means associated with the second track and the second portion for successively re-engaging the carriers with the second portion and the second track,

and a transfer conveyor between the end of said first track and said second track for transferring the carriers to the work station, removing the carriers from the work station and returning the carriers to the second track,

said transfer conveyor comprising a plurality of pairs of closely spaced transfer assemblies, one on each side of the path of the carriers from the first track to the work station and to the second track, at least a first transfer assembly at a first station being provided between the first track and the work station, a second transfer assembly being provided at the work station, and at least a third transfer assembly being provided at a third station between the work station and the second track,

each transfer assembly comprising a plurality of longitudinally spaced wheels mounted with their axes transverse to the path of the carriers and adapted to engage the underside of a carrier adjacent the longitudinal sides of the carrier,

the space between said wheels on one side of the path of a carrier and the wheels on the other side of said path of a carrier being substantially unobstructed,

motor means individual to each said transfer assembly for driving the wheels of each transfer assembly on at least one side of the path of the carriers,

each motor means for driving the wheels of each first and third transfer assembly being operable independently of the other and of the main conveyor to accelerate a carrier thereon to a speed higher than the speed of the main conveyor, and thereafter to decelerate the carrier and to permit free wheeling or braking of the carrier on each transfer assembly,

each motor means for driving the wheels of each second transfer assembly at said work station being operable independently of the other and of the main conveyor to accelerate a carrier thereon to a speed higher than the speed of the main conveyor, and thereafter to decelerate the carrier and to permit braking of the carrier on each transfer assembly,

said first track being positioned such that the first portion of the conveyor delivers a carrier to the wheels of the first transfer assembly adjacent to the first track so that the motor means of the first transfer assembly can be operated to accelerate the carrier and rapidly move the carrier onto the first transfer assembly,

said second track being positioned such that the wheels of the third transfer assembly adjacent the second track deliver a carrier to the second track,

the number of transfer assemblies being such that a carrier will be returned to the main conveyor so that there are no vacant spaces between the closely spaced carriers on the main conveyor while providing necessary work and safety time at the work station.

4,564,101

APPARATUS FOR TRANSPORTING DEVELOPED DISC FILMS IN COPYING MACHINES

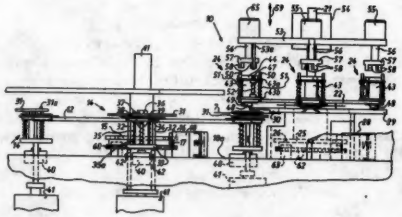
Erich Nagel, Anzing, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 2, 1983, Ser. No. 557,743

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1982, 3245539

Int. Cl.[4] B65G *47/00*

U.S. Cl. 198—346.2 **20 Claims**



1. Apparatus for transporting exposed and developed disc films to and away from and for manipulating disc films at a copying station, comprising a first conveyor defining a first endless path, said first conveyor including a first indexible turntable; film supplying, film transferring and film receiving means adjacent to successive first, second and third portions of said path and respectively arranged to deliver discrete films into said path, to transfer the thus delivered films from and back into said path, and to receive films from said path; a second conveyor defining a second endless path having an initial portion adjacent to the second portion of said first path so that said transferring means can deliver films into and receive films from such initial portion, said second path further having an additional portion at the copying station, and said

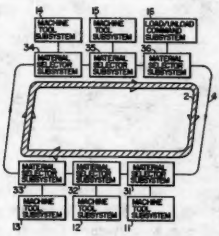
second conveyor including a second indexible turntable overlapping a portion of said first turntable in the region of said transferring means, said turntables being disposed in different planes which are at least substantially parallel to each other and are located at different levels, and said transferring means comprising elevator means for moving disc films between said levels; and means for rotating each disc film which reaches said additional portion on its way back to the initial portion of said second path.

4,564,102

METHOD AND APPARATUS FOR TRANSPORTATION OF MATERIALS

Kinji Mori, Yokohama; Yasuo Suzuki, Ebina; Masayuki Orimo, Machida; Shoji Miyamoto, Kawasaki, and Hirokazu Ihara, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 31, 1983, Ser. No. 547,133
Claims priority, application Japan, Oct. 29, 1982, 57-189060
Int. Cl.[4] B65C *43/00*
U.S. Cl. 198—341 **4 Claims**



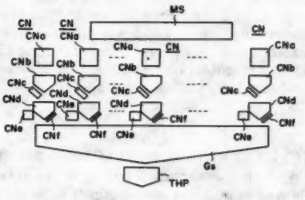
1. A method for transportation of materials in a work-processing system including a plurality of work-processing means processing materials transported thereto by transporting means, comprising the steps of loading newly externally supplied materials on said transporting means detecting material transported by said transporting means by using a detector means associated with each of said work-processing means and storing the results of detection; issuing a material request from any work-processing means when the work-processing means requires a material which is not detected by said work-processing means; communicating the material request from the work-processing means which issued the material request to other processing means; causing each of said work-processing means to search a requested material indicated by the material request, based on the stored results of detection while keeping coordination with the other work-processing means in response to receipt of the material request; reserving said requested material for the work-processing means which issued the material request when said material is found on said transporting means as a result of the searching step while maintaining the material request when the searching step cannot find said requested material on said transporting means; and unloading said reserved material from said transporting means upon arrival of said material at the position of said work-processing means which issued the material request thereby supplying said material to said work-processing means.

4,564,103

METHOD AND APPARATUS FOR CONVEYING LINEAR ARTICLES

Takashi Sashiki, Nagaokakyo, and Keiko Sakaeda, Kyoto, both of Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Mar. 17, 1982, Ser. No. 359,138
Claims priority, application Japan, Mar. 19, 1981, 56-41093; Jul. 24, 1981, 56-116837
Int. Cl.[4] B65G *43/08*; G01G *19/34*
U.S. Cl. 198—358 **1 Claim**



1. A conveyance apparatus for conveying linear articles while maintaining the specific orientation thereof, which apparatus comprises:

a supply station for supplying linear articles having a specific orientation, said supply station including an electromatic feeder, and a main trough vibrated by said electromagnetic feeder in such a manner as to dispense a required amount of the linear articles;

distribution means for distributing to a plurality of locations the linear articles supplied by said supply station, and for holding said linear articles at said locations, said distributing means including an arraying tray for receiving the linear articles dispensed by the main trough, said arraying tray having an opening in the bottom thereof, a mechanism for reciprocating said arraying tray along the direction of conveyance, and a stand-by tray adapted to be raised through the opening in said arraying tray, said stand-by tray having a multiplicity of V-shaped grooves in the floor thereof for receiving and holding the linear articles in said arraying tray as said stand-by tray is raised through said opening;

a pair of walking beams having a multiplicity of first holders disposed along the direction of conveyance for taking up the distributed linear articles;

a crank mechanism for oscillating said pair of walking beams while moving them in the direction of conveyance so that said first holders describe circular orbits;

first holder drive means provided on said walking beams for actuating the first holders corresponding to those linear articles that are to be conveyed from the linear articles previously distributed articles to said plurality of locations, in order that the linear articles to be conveyed may be taken up from said previously distributed articles, linear articles being distributed to said plurality of locations so as to be positioned on the circular orbits of the actuated first holders, the linear articles on the circular orbits of said first holders being taken up by said actuated first holders in the course of their circular orbits, and being conveyed forwardly in the direction of conveyance;

a weighing station provided with a plurality of weighing machines arranged in the direction of conveyance, each having a weighing scale, the linear articles distributed to said plurality of locations being conveyed selectively to the weighing scales of said weighing machines;

a multiplicity of second holders provided on said walking beams along the direction of conveyance for taking up the linear articles conveyed to the weighing scales of said weighing machines;

second holder drive means provided on said walking beams for actuating said second holders; and

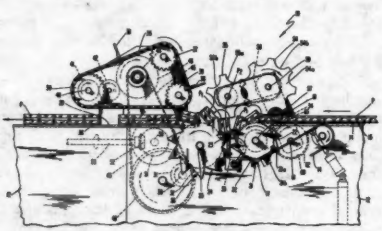
an electronic computing unit for forming combinations of weight values of the linear articles conveyed to the weighing scales of said weighing machines, for selecting from said combinations the best combination of weight values whose sum is closest to a preset target weight, and for causing said second holder drive means to actuate those second holders that correspond to the weighing machines which give said best combination of weight values, linear articles being deposited in each of said weighing scales so as to be positioned in the circular orbits of the actuated second holders, the linear articles on the circular orbits of said second holders being taken up by said actuated second holders in the course of their circular orbits and being conveyed to a discharge station and, at the same time, predetermined linear articles distributed to said plurality of locations are supplied to the weighing scales of said weighing machines that give the best combination, along the circular orbits of said first holders.

4,564,104

ARTICLE FEEDING AND STACKING MECHANISM

Andrew W. Anderson, deceased, late of West Caldwell, N.J. (by Miriam Anderson, executrix), assignor to Scandia Packaging Machinery Co., Clifton, N.J.

Filed Aug. 1, 1983, Ser. No. 518,890
Int. Cl.[4] B65G *47/26*
U.S. Cl. 198—422 **9 Claims**



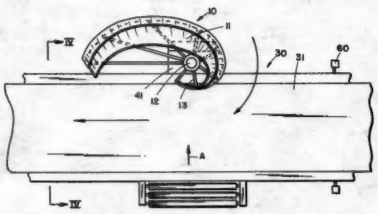
1. An article feeding and stacking mechanism, comprising:
(a) article feeding means for supporting and feeding articles;
(b) article receiving means for receiving a plurality of the articles in predetermined assembled relationship for further processing of the articles;
(c) indexing wheel means between the article feeding means and article receiving means for receiving articles from the feeding means and delivering them in predetermined assembled relationship to the article receiving means;
(d) said indexing wheel means including a plurality of angularly disposed article support pockets having intersecting surfaces thereon for engaging the articles as they are fed from the article feeding means and supporting the articles as the wheel means rotates;
(e) a pair of rotatable control guide wheels adjacent the periphery of the indexing wheel means in alignment therewith and including a plurality of peripheral guide pockets having a curved shape;
(f) the control guide wheels being rotatable in timed relation to each other and to the indexing wheel to move the guide pockets in proximity to articles being transmported on the support pocket surfaces of the indexing wheel means to prevent displacement of articles from the indexing wheel means as it rotates;
(g) the wheel means includes first and second indexing wheels rotatably supported in alignment and adjacent one another;
(h) the article supporting pockets on the first indexing wheel having a size to hold one article and the article supporting pockets on the second indexing wheel having a size to hold two articles;
(i) the indexing wheels being rotatable in timed relationship to cause the first wheel to turn twice as fast as the second wheel whereby the first wheel deposits two articles on the intermediate article support means before the second wheel picks them up;
(j) the control guide wheels being positioned relative to the indexing wheels such that the guide pockets, during their movement with the indexing wheels, remain in position to constrain movement of the articles supported on both of the indexing wheels during substantially the entire time the articles are on the indexing wheels in the transference of the articles from the article feeding means to the article receiving means; and
(k) intermediate article support means located between said indexing wheels in a position to receive articles from the first indexing wheel as the first indexing wheel rotates, and to deliver the articles supported thereon to the second indexing wheel as it rotates past the intermediate article support means.

4,564,105

TILTED SPIRAL ARTICLE DIVERTER

Gerald A. Brouwer, Grandville, and Charles R. DeVries, Grand Rapids, both of Mich., assignors to Lear Siegler, Inc., Grand Rapids, Mich.

Filed Dec. 29, 1983, Ser. No. 566,824
Int. Cl.[4] B65G *47/53, 47/74, 47/82*
U.S. Cl. 198—457 **19 Claims**



1. An article transfer for moving an article laterally from a conveyor to a laterally positioned receiving means, said transfer having an article engaging sweep of spiral configuration, a shaft and means supporting said shaft for rotation, said shaft being located adjacent one edge of said conveyor and inclined laterally of the conveyor whereby its upper end extends at an angle at which the shaft's extended axis would project over said conveyor, said sweep being secured to said shaft for rotation therewith, said attachment being adjacent the point of generation of said spiral sweep whereby at a first position in its rotation substantially all of said sweep is laterally displaced from said conveyor and at a second position in its rotation a portion of said sweep extends laterally substantially across said conveyor, the lower edge of said sweep tracing a curve which maintains a zone characterized by a substantially constant distance between said lower edge and the surface of the conveyor as the sweep is rotated by the shaft between said first and second positions in its rotation, said zone moving outwardly along said sweep and transversely of said conveyor as said sweep rotates.

4,564,106

LIFTING DEVICE WITH TONGUE FLAPS

John Shilcock, Liversedge, England, assignor to Waddingtons Limited, Leeds, England

Continuation-in-part of Ser. No. 492,301, May 6, 1983, abandoned. This application Dec. 5, 1983, Ser. No. 557,815
Int. Cl.[4] B65D *5/46*
U.S. Cl. 206—165 **12 Claims**

1. A lifting device comprising a blank of cut and creased

sheet material, said blank being adapted to be folded to a condition suitable for insertion into aperture means of a holding device holding a group of containers together so that a part of the lifting device will hook under the holding device whereby the group of containers can be lifted by lifting the lifting device, the said lifting device comprising

(a) a first panel portion having a hinge edge and a free edge at the opposite side of the first panel portion from the hinge edge,

(b) a second panel portion having a hinge edge and a free edge at the opposite side of the second panel portion from the hinge edge,

(c) a main hinge line connecting the hinge edges of the first and second panel portions,

(d) first tongue means extending from the free edge of the first panel portion,

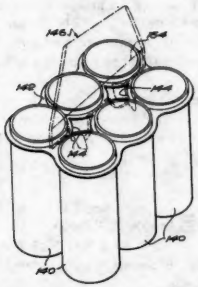
(e) second tongue means extending from the free edge of the second panel portion, said first and second tongue means being located so that hinging the blank about the main hinge line brings the first and second panel portions face to face and the first and second tongue means face to face,

(f) first tongue hook flap means,

(g) first tongue hinge line means hingedly connecting the first tongue hook flap means to the first tongue means,

(h) second tongue hook flap means,

(i) second tongue hinge line means hingedly connecting the second tongue hook flap means to the first tongue means



so that the first and second hook flap means can be folded about the first and second tongue hinge line means onto the outsides of the first and second tongue means when the first and second panel portions are folded into face to face condition, so that the device can be held in folded but flat condition for insertion of the tongues and folded flap means into the aperture means of the holding device;

(j) first hook edge means on the first tongue flap means,

(k) second hook edge means on the second tongue flap means, said first hook edge means and second hook edge means lying at the tops of the first and second tongue flap means and extending from said first and second tongue hinge means in an upwardly inclined manner towards the main hinge line when the device is in the folded condition ready for insertion in said aperture means with the main hinge line at the top thereof.

9. A lifting device comprising a flat blank of cut and creased sheet material, such device being adapted to fit into an aperture of a holding device such as a HICONE holding device holding a group of containers together, said device comprising:

(a) a first panel portion;

(b) a second panel portion;

at least one of said first and said second panel portions defining a handle and also a display area whereby printing may be carried thereby for the purposes, for example, of indicating a special offer,

(c) first tongue means extending from an edge of the first panel portion;

(d) second tongue means extending from an edge of the second panel portion;

(e) a main hinge line connecting the first and second panel portions and about which the device can be folded into substantially flat condition to bring said edges of the first and second panel portions together and the first and second tongue means into face to face relationship;

(f) secondary hinge line means in said first and second tongue means defining first and second catching flap means for folding onto the outsides of the tongues when they are face to face so that the device remains substantially flat and so that the face to face tongues and the folded back catching flap means can be inserted through an aperture in the holding device, until the flap means spring back to engage under the holding device to provide a means for lifting the group of containers;

(g) the handle has a finger engaging aperture; and

(h) the device has a panel of trapezium shape from one side of which projects one of said tongues and the other tongue with its flap means is defined in said panel and can be folded out of the panel into superimposed face to face relationship with said one tongue, the folding of the tongues out of the panel defining a finger engaging aperture.

4,564,107

CONTAINER FOR THE PRESSURE TIGHT PACKAGING OF ARTICLES, IN PARTICULAR TENNIS BALLS

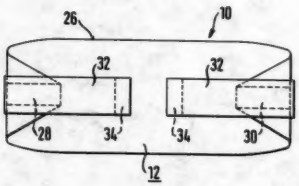
Hans F. Heitzenröder, Langenselbold; Ernst Wachter, Hanau, and Kurt Bitsch, Langenselbold, all of Fed. Rep. of Germany, assignors to Dunlop Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Feb. 9, 1984, Ser. No. 578,523

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1983, 3304590

Int. Cl.[4] B65D *81/20*

U.S. Cl. 206—315.9 **28 Claims**



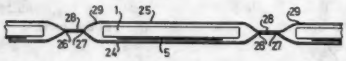
1. A self-supporting pressure-tight container, especially for tennis balls, said container consisting of a strip of a multi-layer foil defining an inner surface and an outer surface of said container, said strip having spaced opposite edges, said foil including a layer impermeable to gas, and at least one layer capable of withstanding the pressure within the container, the layers defining said inner and outer surfaces being of the same material and being weldable, said foil being welded to itself along a longitudinal seam formed between overlapping portions of the inner surface of the foil at one of said edges and the outer surface of the foil at the other edge, said container having at each end a transverse weld seam, said transverse weld seams being formed without overlap by welded-together confronting portions of said internal surface; said transverse weld seams being folded back onto the container; means for pressurizing said container and means for securing said folded back weld seams to said container.

4,564,108

PACKAGE FOR SANITARY NAPKINS

Leif U. R. Widlund; Stefan Nedestam, both of Mölnlycke, and Arne Fröidh, Stenungsund, all of Sweden, assignors to Molnlycke AB, Gothenburg, Sweden

Filed Jun. 12, 1984, Ser. No. 620,076
Claims priority, application Sweden, Jun. 14, 1983, 8303383
Int. Cl.[4] A61F *13/16*
U.S. Cl. 206—438 19 Claims



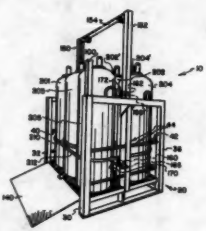
1. Package for menstrual protectors such as sanitary napkins and pads or panty protectors having, on their side facing away from the body of the user, areas coated with pressure-sensitive adhesive intended, when using the napkin, for sticking to the underwear of the user to keep the napkin in place, characterized in that a plurality of sanitary napkins are detachably disposed and mutually spaced in one or more rows with their adhering side placed in contact with a film, preferably of paper or plastic, the film with the napkins applied thereon being folded so that the napkins are laid on top of one another to form one or more piles, the film in its folded condition enclosing the sanitary napkins applied thereon, the film extending laterally outside the sanitary napkins, after folding of the film with the napkins placed thereon, being sealed there by welding, gluing or the like.

4,564,109

METHOD AND APPARATUS FOR TRANSPORTING PRESSURIZED GAS CYLINDERS

Lars G. Stavlo, Sigtuna, Sweden, assignor to AGA, A.B., Cleveland, Ohio

Filed Sep. 9, 1982, Ser. No. 416,237
Int. Cl.[4] B65D *19/00*
U.S. Cl. 206—597 12 Claims



5. A package of integrated gas cylinders which comprises:

(a) an even number of gas cylinders arranged in two side-by-side rows of equal numbers of cylinders with the cylinders defining a linear array of pairs, and with there being at least three cylinders in each row;

(b) a pair of elongated spacer bars between said rows in contact with the cylinders of each row;

(c) separate bands for tightly banding all of the pairs of cylinders and the spacer bar therebetween except the end pairs of the array with a separate band for banding each of the pairs, with each of the separate bands extending tightly around each of the cylinders of its associated pair for a distance extending through about 180 degrees of the perimeter thereof; and,

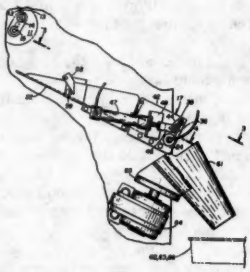
(d) still another separate band tightly peripherally embracing the entire array of cylinders to securely clamp the cylinders of the array and the said spacer bar wherein said spacer bars constitute the sole cylinder spacing elements in the multi-cylinder package.

4,564,110

APPARATUS FOR POSITIONING GRAVITY FED COMPONENTS IN AN ELECTRICAL TEST FACILITY

Marlon Z. Kasprzyk, Westchester, Ill., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Jun. 22, 1984, Ser. No. 623,064
Int. Cl.[4] B07C *5/02, 5/344*
U.S. Cl. 209—544 13 Claims



1. An apparatus for orienting articles, which comprises:

a gravity chute for receiving an article;

a pivotally mounted gate located at the lower end of said chute for retaining an article advanced down said chute;

means for detecting an article retained by said gate in a predetermined orientation and for accordingly pivoting and opening said gate to pass the article under the opened gate; and

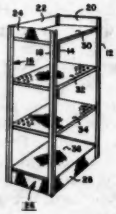
means responsive to said detecting means failing to detect the article in the predetermined orientation for pivoting the gate in an upstream direction to kick the article back up said gravity chute.

4,564,111

POST-PANEL CONNECTION FOR SHEET METAL FURNITURE

James M. Suttles, Elberton, Ga., assignor to The Mead Corporation, Atlanta, Ga.

Filed Dec. 29, 1983, Ser. No. 566,657
Int. Cl.[4] A47B *47/00*
U.S. Cl. 211—189 13 Claims



1. In an article of sheet metal furniture such as a merchandising display stand, comprising a sheet metal upright post and at least one panel having a face situated in a substantially vertical plane and extending horizontally from the post, the improved structure wherein:

the sheet metal upright post comprises a first planar section and a return flange extending substantially parallel to the first planar section in spaced relationship therewith to provide a space between the first planar section and the flange, a web connecting the return flange to the first planar section, the web having at least one opening for receiving a tab;

the panel has at least one tab extending in a horizontal direction from its face, the face of the panel being positioned outside of the space between the first planar section and the flange, and said tab extending through the tab-receiving opening into the space between the first planar section and a flange, and a projection formed on said tab and extending horizontally from the tab in a direction transverse to said horizontal direction in which the tab extends from the face of the panel; and

the sheet metal upright post includes means having an oblique locking surface facing both downwardly and, in said direction of the tab, away from the location at which the tab meets the face of the panel, the oblique locking surface being in engagement with the projection on the tab and preventing the tab from being withdrawn through the opening in the web.

4,564,112

CLOSURE CAP FOR A CONTAINER

Hans-Werner Breuer, Himmelried, Switzerland, assignor to Crown Obrist AG, Reinach, Switzerland

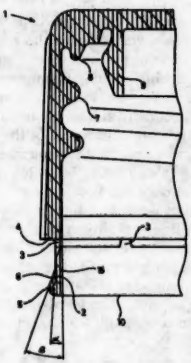
PCT No. PCT/CH83/00149, § 371 Date Jul. 26, 1984, § 102(e) Date Jul. 26, 1984, PCT Pub. No. WO84/02694, PCT Pub. Date Jul. 19, 1984

PCT Filed Dec. 28, 1983, Ser. No. 638,476

Claims priority, application Switzerland, Jan. 7, 1983, 84/83

Int. Cl.⁴ B65D *41/54*

U.S. Cl. 215—246 **4 Claims**



1. A closure cap for a container, which cap is provided with a heat-shrinkable guarantee strip (2) and is produced integrally with the guarantee strip from thermoplastic material in an injection moulding process, wherein the guarantee strip is connected to the lower edge (4) of the closure cap by way of a plurality of rupturable connecting web portions (3) and is intended at least partially to embrace the neck of the container and can be brought into engagement therewith by heat-shrinking, and wherein the wall thickness of the guarantee strip has a reinforcement portion (5) in the region between each two rupturable connecting web portions and the individual reinforcement portions are interrupted and spaced apart by portions of smaller wall thickness, including the improvement in that the reinforcement portions (5) are arranged on the outward side (6) of the gurantee strip (2) and that the cross-sections of the reinforcement portions increase towards the lower edge of the guarantee strip.

4,564,113

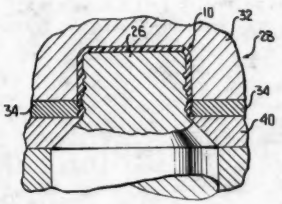
INJECTION MOLDED PLASTIC CLOSURE

Leo R. Mendler, Chicago, Ill., assignor to Continental White Cap, Inc., Northbrook, Ill.

Filed Sep. 6, 1984, Ser. No. 647,762

Int. Cl.⁴ B65D *41/34, 41/48*

U.S. Cl. 215—252 **7 Claims**



1. A molded plastic member, said plastic member being of the injection molded type and including a cylindrical portion having an internal projection of the type including threads, beads and ribs and being of the type formed by injection molding over a core, said member being improved by there being provided in the external surface of said cylindrical portion in radial alignment with said internal projection a groove generally of the size and shape of said internal projection whereby when said member is stripped from a core said internal projection may generally deform into said groove of said cylindrical portion and thus be readily stripped from a groove in the core in which said internal projection is formed.

4,564,114

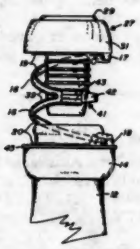
MOLDED SAFETY CLOSURE DEVICE

Harold E. Cole, Magalia, Calif., assignor to James R. Goldberg, Novato, Calif.

Filed Dec. 21, 1984, Ser. No. 684,810

Int. Cl.⁴ B65D *41/48*

U.S. Cl. 215—256 **5 Claims**



1. A safety closure device comprising a closure element adapted to close the mouth of a bottle or the like by frictional engagement with the interior facing surface of the mouth, a retainer collar, and an intercoupling means connecting said collar to said closure element with said closure element and said collar extending substantially coaxially with each other, said intercoupling means comprising a tabbed tether strip, said tether strip being integrally formed with and secured at its respective ends to said closure element and said collar, said tether strip being joined to said closure element and said collar along a preselected length of said tether strip by frangible webs of a preselected thickness to permit said tether strip to be manually separated from said closure element and said collar along said preselected length, said tether strip being folded upon itself at least once and being of a length unfolded such

that said closure element may be removed from the bottle or the like but is restrained by said collar and said tether strip from flying free.

4,564,115

COVERS WITH A TEARABLE TAMPER-PROOF BAND

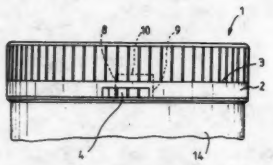
Jean P. Imbert, Villefranche sur Saone, France, assignor to La Bellignite, Bellignat, France

Filed Oct. 5, 1984, Ser. No. 659,821

Claims priority, application France, Oct. 5, 1983, 83 15851

Int. Cl.[4] B65D *41/18*

U.S. Cl. 215—256 **2 Claims**



1. A repeatedly reusable cover for closing a receptacle of the type having a ring carried by a neck portion, said cover comprising a skirt having a tearable tamper-proof band between a lower edge of said skirt and a peripheral line of reduced resistance formed in a lower region of said skirt substantially parallel to said lower edge, a lever for wrenching off said band, said lever being rigidly connected to one region of said band, a peripheral groove on the inside face of said skirt for cooperating with the ring of said receptacle to ensure the closing thereof, an opening tongue covered by the wrenching lever when the tamper-proof band is in an initial position, said tongue being formed as an integral part of the tamper-proof band, before the wrenching off thereof, and bounded by two lateral lines of reduced resistance which tear during the wrenching off of the tamper-proof band and by a horizontal line of articulation of the tongue, said cover being characterized in that said lateral lines of reduced resistance are formed on the tamper-proof band and extend beyond the peripheral line of reduced resistance defining the upper edge of the tamper-proof band and in that the line of articulation of the tongue is situated on the skirt of the cover a small distance above the region of the tongue corresponding to the lower edge of the skirt of the cover.

4,564,116

CLOSURE CAP FOR BEVERAGE CONTAINERS

Helmut Prohaska, Pöttenberg, Austria, assignor to Folienwalzwerk Bruder Teich Aktiengasellschaft, Wien, Austria

PCT No. PCT/EP82/00082, § 371 Date Dec. 8, 1982, § 102(e) Date Dec. 8, 1982, PCT Pub. No. WO82/03612, PCT Pub. Date Oct. 28, 1982

PCT Filed Apr. 8, 1982, Ser. No. 448,895

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1981, 3114613

The portion of the term of this patent subsequent to Feb. 14, 2001, has been disclaimed.

Int. Cl.[4] B65D *41/42*

U.S. Cl. 215—256 **29 Claims**

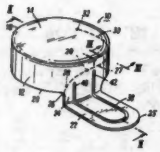
1. A closure cap for a beverage bottle of the type which has a beaded rim including an annular axial end and an annular groove defined by the beaded rim where it terminates on the exterior or the bottle neck, the beverage when contained in the bottle after the closure cap has been installed thereon being at some time subjected to physical effects likely to increase the interior pressure in the interior space above the beverage, and said closure cap comprising:

A. a substantially cylindrical inverted dish-like member having a disc-shaped crown, a substantially cylindrical side wall defining a cylindrical jacket and a rounded annular juncture between the crown and the cylindrical jacket forming an interior fillet, said closure cap being engagable over the beaded rim of the bottle, and the cylindrical jacket having a vertical dimension sufficient to enable crimping thereof into engagement with the annular groove beneath said beaded rim,

B. a rip tab having opposite side edges and a free end, said rip tab being connected to said lower edge of said jacket along a small fraction of the circumference of said lower edge thereof, said rip tab extending generally radially outwardly of said jacket when said rip tab is in a horizontal plane and adapted to be bent downwardly to lay close to the bottle neck when said closure cap is installed,

C. a sealing member of gasket material disposed in said fillet on the interior of said dish-like member covering at least the upper portion of the interior of said cylindrical jacket and extending radially inwardly of said crown a distance at least sufficient to engage the annular axial end of the beaded rim of the bottle when installed,

D. a rip line at least most of which is formed in said cylindrical jacket and extending with continuity having at least



first and second portions, the first commencing at a location where a corner of one side edge of the rip tab and the lower edge of the cylindrical jacket meet, extending in a shallow rise from said lower edge and continuing circumferentially of said side wall toward the rounded annular juncture in a direction to pass the second side edge of the rip tab and the second portion commencing at a level located below the crown and continuing in said cylindrical jacket circumferentially at least about half-way around said jacket from the commencement of the rip line,

E. said dish-like member and rip tab being integrally formed by metal working from readily bendable sheet metal so that the installed closure cap is capable of containment of the interior pressures while enabling facile opening of said closure cap by pulling said rip tab in a generally circumferential movement to sever the jacket along said rip line,

F. and means for effecting controlled relief or internal pressure, said means comprising at least one groove formed on the inner surface of said cylindrical jacket, said groove located to avoid an acute angled intersection with said rip line.

4,564,117

BOTTLE CLOSURE

James F. Herbert, Staffordshire, England, assignor to Metal Closures Limited, Staffordshire, England

Filed Jul. 18, 1984, Ser. No. 631,881

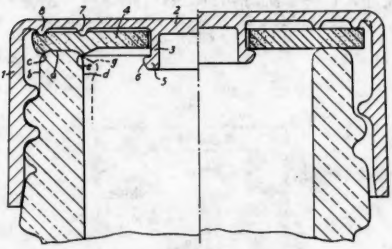
Claims priority, application United Kingdom, Jul. 27, 1983, 8320266

Int. Cl.[4] B65D *53/04*

U.S. Cl. 215—329 **8 Claims**

1. A closure device for a standard containerhaving an externally screw threaded neck and a mouth presenting an upwardly facing sealing surface, bounded by an outer rounded corner service, said closure comprising a moulded plastics shell and a substantially planar liner gasket supported in said shell, said shell comprising a top panel and an internally threaded shirt, said top panel carrying, on its under surface, a central spigot, having an enlarged lower end and having at least one circular rib near its periphery, said liner gasket having a con-

trol aperture, within which said spigot fits loosely, of smaller size than said enlarged lower end of the spigot, said gasket having an outer diameter which is larger than the external



diameter of the neck of the container but which is smaller than the diameter of the undersurface of the top panel of said shell whereby said liner gasket may turn in relation to said shell.

4,564,118

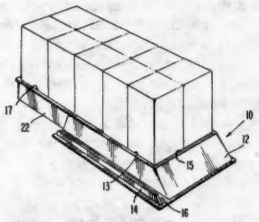
ADJUSTABLE SLIDE TRAY

Robert E. Heyer, Milltown, and Michael A. Tannenbaum, Freehold, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 31, 1984, Ser. No. 688,089

Int. Cl.[4] B65D *6/04, 6/16*

U.S. Cl. 220—8 **3 Claims**



1. An adjustable tray comprising:

(a) a base unit having a substantially rectangular shape having a bottom, a front wall, and two side walls, there being a pair of dovetailed slots extending along the interiors of said side walls from said front wall out the open rear portion of said base, there being at least one dovetailed slot in said base which does not extend beyond said open rear of said base, said base unit being made of a relatively thin, vacuum formed plastic;

(b) a sliding tray having a rear wall and two side walls, said sliding tray having a pair of dovetailed guides which fits within said pair of dovetailed slots in said side walls of said base, whereby said sliding tray may be slid in and out of the base, thereby adjusting the overall size of the slide tray unit, said sliding tray including slide stop means comprised of a substantially rectangular dovetailed portion which extends down from the bottom of said sliding tray into said slot in said base which does not extend out of the rear portion of said base for limiting the rearward travel of said sliding tray, said sliding tray being made of the same relatively thin, vacuum formed plastic material as said base unit.

4,564,119

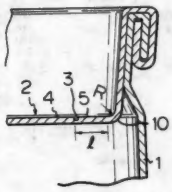
ALUMINUM CAN END

Mitsuo Tsuge, Mishima; Shigeru Kohmura; Keiichi Sugiyama, both of Shizuoka; Hisao Saitoh, Fuji, and Shigenori Saitoh, Ihara, all of Japan, assignors to Nippon Light Metal Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1984, Ser. No. 679,383

Int. Cl.[4] B65D *17/34*

U.S. Cl. 220—270 **6 Claims**



1. In a can end of an aluminum alloy can consisting of a body having a closed bottom and an upper open end and made of a thin aluminum alloy sheet and said can end made of a thin aluminum alloy sheet with the peripheral edge thereof being sealingly curled together with the periphery of said upper open end of said body so as to form an upwardly diverging frustoconical portion along the periphery of said can end thereby forming a hermetically sealed vessel adapted to sealingly contain therein pressurized liquid such as carbonated beverage or beer, said can end being formed with a circular score within the area of said can end along the periphery thereof so as to form a severable portion from said can end, a manipulating tab being secured at an appropriate portion thereof to said can end within the area defined by said circular score adjacent thereto so as to permit the area defined by said score to be severed from said can end by pulling said manipulating tab apart from said can end, the improvement wherein said aluminum alloy sheet forming said can end is so regulated that it has the yield strength in the range of 24–29 kgf/mm^2 and the elongation equal to or greater than 6%, while the aperture rate defined by the ratio of the area defined by said score with respect to the total area of said can end is selected to be at least equal to or greater than 60%, so that the pressure resisting strength of said can end is kept to be substantially at least 5 kgf/cm^2, said score being spaced from the corner formed around the bottom of said frustoconical portion at least a distance equal to or greater than 1 mm inwardly of the area of said can end, the inner radius of curvature of said corner being selected to be equal to or less than 0.5 mm.

4,564,120

MAGNETIC TAPE CASSETTE

Albert Pertzsch; August Liepold, both of Munich; Hubert Brunner, Weil, and Ludwig Zeroni, Ottobrunn, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 17, 1984, Ser. No. 641,598

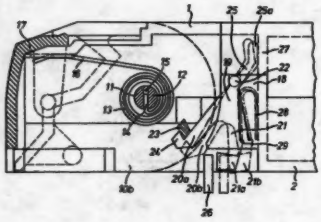
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1983, 3331258

Int. Cl.[4] B65D *43/14, 51/04*

U.S. Cl. 220—337 **4 Claims**

1. A magnetic tape cassette for magnetic recording and play-back devices comprising a substantially rectangular, two-part housing comprised of an upper part which has an upper main wall and a lower part which has a lower main wall, each part with three side walls, and an opening along a front side of the cassette, along which a magnetic tape is transportable from two plane-parallel-positioned reels, and a pivotal front lid mounted on said housing which partly overlaps the side walls and which releases and closes said opening and comprises an outer cover and an inner cover positioned intermediate said

outer cover and said upper part, by which the magnetic tape is enclosable in the closed position of said front lid, the front lid being biassed by a two-armed safety bar which may be moved backwards and forwards and is positioned on one side of the lower part of the cassette, the swivel range of which is restricted by a pin on the inside of the side part of the front lid,



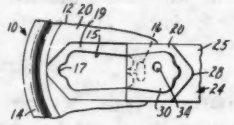
characterised in that the two-armed safety bar extends beyond its bearing journal, and the extension in the closed position of the front lid serves as a stop on the wall, positioned behind, on the upper part of the cassette, and a U-shaped leaf spring is provided to bias the safety bolt between the back wall of the safety bar bearing and the adjacent safety bar arm.

4,564,121

TAPE CLOSURE FOR A CAN END

Wilfred R. Brochman, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 458,564, Jan. 7, 1983, abandoned. This application Dec. 14, 1983, Ser. No. 561,462
Int. Cl.[4] B65D *41/00*
U.S. Cl. 220—359 **7 Claims**



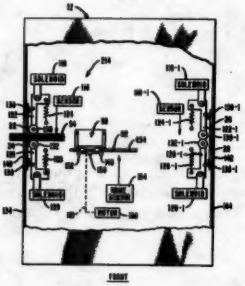
1. A container end assembly comprising:
- a container end formed of tin-free steel having an exterior surface and an interior surface and being formed with a pour opening;
- a polymeric layer comprised of a vinyl chloride/vinyl acetate copolymer bonded to said exterior surface of said end; and
- a tape strip comprising a backing coated on one surface with a thermoplastic adhesive and bonded by said adhesive to an area of the exterior surface of said layer circumjacent and covering said pour opening, said adhesive forming a bond between said tape strip and said layer having greater strength than the bond between said layer and the exterior surface of said tin-free steel end supporting said layer, causing said layer to break and peel from said end upon removal of the tape strip from the container end.

4,564,122

PRESENTER MECHANISM FOR USE IN A SHEET DISPENSER

Robert H. Granzow, Miamisburg; Dale L. Placke, Dayton; Harold L. McMorrow, Kettering, and Charles S. Nagy, Dayton, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 28, 1984, Ser. No. 594,450
Int. Cl.[4] G07F *11/00*
U.S. Cl. 221—12 **6 Claims**



1. A sheet dispenser comprising:
- a housing having first and second sheet delivery areas therein;
- means for selectively delivering a stack of sheets to said first and second sheet delivery areas,
- first sensing means and second sensing means positioned at said first and second sheet delivery areas, respectively, for sensing when a said stack of sheets approaches said first and second sheet delivery areas, respectively;
- first and second closures located at said first and second sheet delivery areas, respectively; said first and second closures also being moveable between closed and opened positions with respect to the first and second sheet delivery areas, respectively; and
- first holding means and second holding means located at said first and second sheet delivery areas, respectively, for holding a stack of sheets delivered by said delivering means to said first and second sheet delivery areas, respectively;
- said first holding means comprising:
- first and second members for holding a stack of sheets delivered to said first sheet delivery area by said delivering means; said first and second members being moveable between holding and non-holding positions with respect to a said stack of sheets;
- an actuator; and
- coupling means for coupling said first and second members with said actuator and also for coupling said first closure with said first and second members so as to move said first and second holding members to said non-holding position and also to move said first closure to said opened position when said actuator is energized to thereby enable a said stack of sheets to be positioned between said first and second holding members and also to extend out of said first sheet delivery area to be grasped; said coupling means also being effective for moving said first and second members towards each other to hold said stack of sheets therebetween and also for moving said first closure towards said closed position when said first actuator is de-energized; and
- said dispenser also including means for energizing said actuator when said first sensing means senses an approaching said stack of sheets.

4,564,123
MAGAZINE DRIVING DEVICE IN PAPER TUBE RELEASING APPARATUS

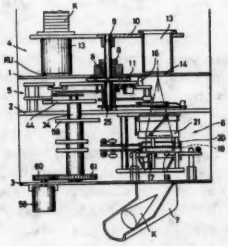
Shinji Noshi, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

Filed Sep. 28, 1983, Ser. No. 536,526

Claims priority, application Japan, Oct. 1, 1982, 57-149343[U]

Int. Cl.⁴ G07F *11/12*

U.S. Cl. 221—11 **8 Claims**



5. A magazine driving device of the type used in conjunction with a tube releasing apparatus having a sectionalized tube storage magazine, a tube releasing section and a magazine driving device for rotating the storage magazine and thereby enabling each section of the magazine to supply at least one tube to the tube releasing section after the tube supply in the previous magazine section is exhausted, the magazine driving device comprising:

(a) a rotatable latch wheel coupled to the storage magazine and having an axis of rotation;

(b) a clutch mechanism for transmitting a rotational force to the latch wheel, the clutch mechanism comprising:

(i) a rotatable first clutch member having the same axis of rotation as the rotatable latch wheel;

(ii) a second clutch member rotatably coupled to a distal portion of the first clutch member;

(iii) a latch pin for engaging the latch wheel, the latch pin being coupled to a distal portion of the second clutch member; and

(c) tube detecting means associated with the clutch mechanism for detecting the presence or absence of a tube and rotating the second clutch member to engage the latch pin with the latch wheel when no tube is detected; and

(d) rotating means for rotating the first clutch member so that, when the latch pin is engaged with the latch wheel, the latch pin rotates the latch wheel.

4,564,124
DISPENSING CONTAINER

George W. Burton, London, England, assignor to Johnsen & Jorgensen (Plastics) Ltd., London, England

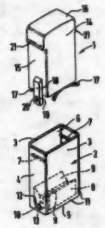
Filed Dec. 20, 1983, Ser. No. 563,507

Claims priority, application United Kingdom, Dec. 21, 1982, 8236304

Int. Cl.⁴ B65H *3/00*

U.S. Cl. 221—263 **7 Claims**

1. A dispensing container comprising an inner element and an outer element with a filling opening and a bottom wall, the outer element substantially enclosing the inner element when the two parts of the container are assembled, an article orienting member at the bottom of the outer element in the form of a block with spaced ends and inclined top surfaces sloping inwards to a channel extending substantially from end to end of the block to receive articles arranged in alignment ready to be dispensed one at a time, there being relatively small spaces provided at each side and at one end of the block and a larger space at the other end of the block, a projecting attachment on the inner element with a pocket therein to receive a single article, a dispensing opening in the bottom wall of the outer element in the large space and in alignment with the end of the channel, which slopes downwards towards the dispensing opening, said outer element so dimensioned that the projecting attachment can pass through the opening but is normally positioned so as to close the opening and spring means at the lower



end of the inner element, the arrangement being such that when the inner member is pressed it is moved axially downwards relative to the outer element so that the projecting attachment is moved through the dispensing opening in the bottom of the outer element to dispense a single article from the pocket and at the same time to close the end of the channel to prevent a second article being dispensed.

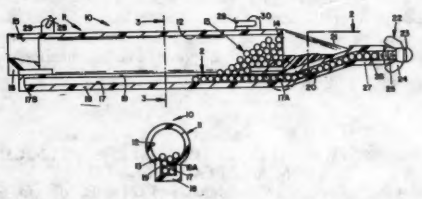
4,564,125
BB LOADER

James J. Esslinger, 1314 N. Drexel Ave., Indianapolis, Ind. 46201

Filed Apr. 20, 1984, Ser. No. 602,553

Int. Cl.⁴ F41C *25/00*; A47F *1/00*

U.S. Cl. 221—288 **7 Claims**



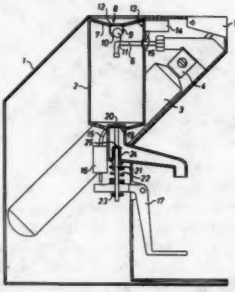
1. A BB loader comprising a housing having a forward end and a rearward end and further having a reservoir therebetween for storage of BB's, the housing further having a longitudinal trough means formed therein laterally of the reservoir and in communication therewith, the trough means having an open forward end and a closed rearward end, and chute means carried by the forward end of the housing and in communication with the forward end of the trough means, whereby a substantially predetermined quantity of BB's may be loaded into the trough means from the reservoir, and whereby subsequently, substantially the entire predetermined quantity of BB's may be dispensed as a row out of the trough means and through the chute means, wherein the trough means comprises a longitudinal member carried on the side of the housing, the longitudinal member having a trough formed therein, the trough having a transverse width sufficient for two BB's side-by-side, and the housing having a longitudinal slot formed therein and communicating the reservoir with the trough, the longitudinal slot having a transverse width sufficeint to accommodate one BB.

4,564,126

ARRANGEMENT FOR SUPPLYING GAS TO A LIQUID IN A CONTAINER THEREFOR

Bengt O. Adolfsson, Stockholm, Sweden, assignor to Kommanditbolaget Aldolf, Västerås, Sweden

PCT No. PCT/SE82/00184, § 371 Date Jan. 24, 1983, § 102(e) Date Jan. 24, 1983, PCT Pub. No. WO82/04244, PCT Pub. Date Dec. 9, 1982
PCT Filed May 19, 1982, Ser. No. 463,445
Claims priority, application Sweden, May 25, 1981, 8103281
Int. Cl.[4] B67D *5/54*
U.S. Cl. 222—61 8 Claims



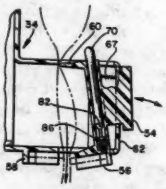
1. An apparatus for domestic use for carbonating water for the subsequent preparation of carbonated beverages by flavouring the carbonated water and including a container (**2**; **30**; **45**) having a gas pipe (**6**) discharging thereinto, said container being provided with a fill orifice (**8**; **31**) through which water is introduced into the container, an orifice (**19**) for emptying water from the container, and gas-venting means (**13**, **15**, **16**), characterized by: means (**8**; **31**; **48**) for permitting gas supplied to the container to escape therefrom unless the container is filled with water to a given level, the fill orifice being closeable, a discharge outlet of the gas pipe being disposed below said given level, a small volume of gas always being enclosed in the container above the water surface, and the gas-venting means having an inlet orifice disposed in communication with said gas volume.

4,564,127

DISPENSER WITH PUMP FOR DISPENSING LIQUID FROM A COLLAPSIBLE BAG

Michael E. Garabedian, Arlington, and Glenn E. Morgan, Sr., Ft. Worth, both of Tex., assignors to Dexide, Inc., Fort Worth, Tex.

Filed Mar. 22, 1984, Ser. No. 592,075
Int. Cl.[4] B65D *35/56*
U.S. Cl. 222—96 11 Claims



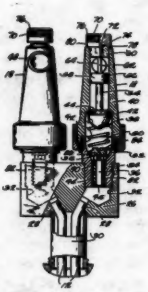
1. A liquid dispenser for use with a bag comprising:
(a) a frame;
(b) a bag support means attached to said frame for holding a bag containing a liquid in a substantially upright position, said bag having a releasable seal formed by a clip;
(c) a pumping means moveable with respect to said frame to permit the attachment of said bag to said frame, said pumping means further comprising:
(i) a pump arm frame which is moveable with respect to said frame;
(ii) a pump arm pivotally attached to said pump arm frame for movement between a closed and open discharge position;
(iii) a spring means connected to said pump arm and said pump arm frame to hold said pump arm in the closed position;
(iv) a first bag clip receiving means attached to the bottom of said pump arm for receiving a clip on the bag;
(v) a pump arm activating means attached to said pump arm for pivoting said arm; and
(d) a second clip receiving means attached to said frame in a location opposite to said first bag clip receiving means when said pump means is attached to said frame for receiving the opposite side of the clip on the bag, movement of the pump arm to the discharge position separates the two sides of the clip on the bag to permit discharge simultaneously opens the valve, and moves the pump arm against the bag to force the discharge of liquid from the bag between the pump arm and bag valve.

4,564,128

BEVERAGE DISPENSING SYSTEM AND TAP

Daniel E. Belich, 6750 W. Monona Pl., Milwaukee, Wis. 53219

Continuation of Ser. No. 357,935, Mar. 15, 1982, abandoned.
This application Jul. 10, 1984, Ser. No. 629,327
Int. Cl.[4] B67D *3/04*
U.S. Cl. 222—135 3 Claims



1. A beverage dispensing system for conveying beverages from plural remote containers to dispensing means in a tapping area, comprising:
A. an independent tap line communicating between each beverage container and an independent tap in the tapping area; and
B. means in the tapping area for enabling and disabling the operation of each said tap; and a valve body and a slide movable within said body for operating said tap, an end portion of said slide being withdrawn within said tap body when said tap is opened; a novel locking device comprising a screw having a shank for being threaded into a corresponding bore in the end portion of said slide and a head for bearing against an external portion of said valve body to prevent said slide from being withdrawn into said body when said screw is advanced into said threaded bore, and to allow said slide to be withdrawn into said valve body when said shank is threadedly retracted at least part way out of the bore in said slide, whereby to provide a system in which the plural containers can be

successively drawn without leaving the tapping area by enabling one tap at a time and disabling the taps not in immediate use.

4,564,129

DOSAGE DISPENSING UNIT

Joseph J. Urban, Richboro, Pa., and Norman L. Henderson, Gladstone, N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Jan. 27, 1983, Ser. No. 461,289

Int. Cl.⁴ B65D *37/00*

U.S. Cl. 222—207 **6 Claims**

1. A dosage dispensing unit for attachment to a container, said unit comprising:

a cylindrical body member for attachment to the open mouth of a bottle, said member having a cylindrical chamber defined by an interior wall and being open at one end for communicating with the interior of the bottle, said cylindrical chamber also communicating with a dispensing outlet,

a dosage well formed on one side of the interior wall of said body member, said well being formed by a wall extending upwardly from the lower portion of the cylindrical body, and being open at the top and closed at the bottom,

a semi-annular trough extending around said interior wall, the inner surface of the trough defining a communicating channel between the interior of the bottle and the upper surface of the trough, and communicating at both ends thereof with said dosage well for receiving liquid upon tilting of said bottle and channeling same to said dosage well, and

an overflow depression defined by the upper edge of the wall of the well and the communicating channel, which depression allows air to escape from the well upon filling with liquid.

4,564,130

DISPENSER FOR PASTE-LIKE PRODUCTS

Jürgen Eulenburg, Neuss, Fed. Rep. of Germany, assignor to Josef Wischerath GmbH & Co., KG, Fed. Rep. of Germany

PCT No. PCT/EP83/00165, § 371 Date Feb. 28, 1984, § 102(e) Date Feb. 28, 1984, PCT Pub. No. WO84/00140, PCT Pub. Date Jan. 19, 1984

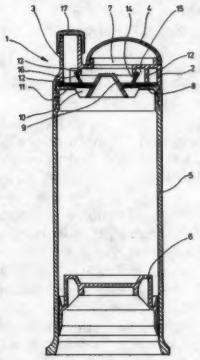
PCT Filed Jun. 29, 1983, Ser. No. 589,067

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1982, 3224199

Int. Cl.⁴ G01F *11/00*

U.S. Cl. 222—207 **12 Claims**

1. A dispenser for paste-like products comprising: a headpiece including a discharge channel with a dispensing orifice and a pump chamber, the volume of said pump chamber being variable by external actuation and said pump chamber being in communication with said discharge channel via a path blockable only in the direction of said dispensing orifice by means of an outlet check valve; and a container with opposite longitudinally spaced apart ends having one end connected to said headpiece, the end of the container remote from the headpiece having an orifice and a slidable piston in said orifice and in sealing engagement with the interior wall of said container, said container being in communication with said pump chamber via an inlet check valve opening only in the direction of said pump chamber and mounted on a support base extending between said pump chamber and the interior of said container, wherein said inlet check valve includes a valve seat comprising a conical element tapering toward said pump chamber, said conical element being connected to said support base through bridges and surrounded by a plurality of passageways between said bridges, said inlet check valve including further an inlet closure member comprising an apertured disk of flexible material having a radial outer area, a radial inner area and having an inner rim defining the aperture therein, said apertured disk being positioned coaxially with said conical element and with



said radial outer area tightly held on said support base and, in the closed position of said inlet closure member, said inner rim being positioned in sealing engagement with said conical element thereby closing said passageways, wherein said headpiece includes an integral annular collar having a free rim terminating at a distance from said support base and defining an annular gap between said free rim and said apertured disk, and wherein said outlet check valve includes an outlet closure member comprising a flexible annular wall positioned concentrically and integral with said apertured disk and flaring conically therefrom to provide a free flared end of said annular wall and, in the closed position of said outlet closure member, said free flared end being positioned in sealing engagement with the free rim of said annular collar, thereby closing said annular gap.

4,564,131

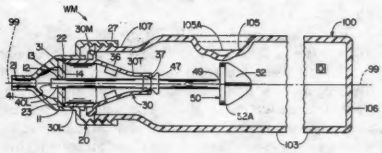
DISPENSING CLOSURE MECHANISM FOR RESILIENTLY SQUEEZABLE RECEPTACLES

Gerald F. Lantry, 2002 Ave. G, Council Bluffs, Iowa 51501

Filed Feb. 8, 1985, Ser. No. 699,945

Int. Cl.⁴ B65D *37/00*

U.S. Cl. 222—213 **11 Claims**



1. In combination with an elongate receptacle for liquid type fluids and that comprises manually resiliently squeezable de-

flectable wall means surrounding a longitudinally extending central-axis and comprises as two longitudinally separated terminii a leadward open-neck surrounding and a trailward closed bottom-wall intersecting said central-axis, said receptacle deflectable wall means between said terminii being provided with visual indicator means to indicate where manual pressure is to be correctly exerted for causing fluid delivery past the leadward open-neck, a dispensing closure mechanism for the receptacle open-neck and comprising:

(A) a cp means provided with a leadward outlet-opening for fluid delivery and further provided with a trailward annular cap-skirt secured to the receptacle open-neck, and said cap means trailwardly of the outlet-opening being internally provided with an interior annular boss surrounding said central-axis;

(B) an elongate spindle extending parallel said central-axis, said spindle length including:

i. a lead-end located trailwardly of the cap means outlet-opening,

ii. a leadward-length located trailwardly of said lead-end and being surrounded by the receptacle open-neck and the cap means cap-skirt, and

iii. a trailward-length located trailwardly of said leadward-length and terminating at a spindle trail-end within said receptacle, said trailward-length being provided with a circumferential discontinuity type fulcrum;

(C) clampably mounted within said cap means at the internal annular boss thereof, a centrally-open gasket surrounding said central-axis, said gasket in directions normal to said central-axis being resiliently stretchable, and said gasket constrictable surrounding the spindle nearer to the lead-end thereof than to the discontinuity type fulcrum;

D. an adapter separable from but having a longitudinally arrested relationship to said cap means, said adapter surrounding the central-axis and the spindle, said adapter including a medial flange portion extending in sealing relationship between the cap means and the receptacle open-neck, said adapter including a tubular leadward-skirt securely removably engaged by the cap means and bearing against the trailward side of said centrally-open gasket and in surrounding relationship to the gasket central-opening, and said adapter including a fluid-pervious reticulated trailward-skirt surrounding and being pivotably secured to the spindle circumferential discontinuity type fulcrum; and

E. a rim type shoulder surrounding and attached to the spindle trailwardly of the circumferential discontinuity type fulcrum and being co-longitudinal with the receptacle visual indicator means, whereby maintenance of manual pressure against the visually indicated wall means contacts the rim type shoulder causing it and the spindle to pivot at said fulcrum and resiliently stretch the gasket central-opening to permit fluid delivery therethrough and thence ultimately through the cap means outlet-opening.

4,564,132

FLUID DISPENSING ASSEMBLY

William T. Lloyd-Davies, Irvine, Calif., assignor to Scholle Corporation, Irvine, Calif.

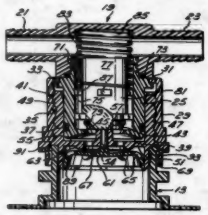
Filed Feb. 24, 1984, Ser. No. 583,380
Int. Cl.[4] B22D *37/00*
U.S. Cl. 222—522 **21 Claims**

1. A fluid dispensing assembly for continuous dispensing of fluid from a fluid container to a fluid passageway comprising:

a connector valve adapted to be in fluid communication with the passageway and a container valve adapted to be in fluid communication with the container, the valves being mutually engageable and adapted to open upon engagement to permit fluid flow from the container through the valves to the passageway;

each of the valves comprising a cylindrical housing open to fluid flow therethrough, the housings having proximal ends and being adapted for mutual locking engagement to permit fluid flow therebetween, the container valve housing having a distal end adapted for mounting to the container, and the connector valve housing having a distal end adapted for fluid flow engagement wwith the fluid passageway;

one of the valve housings having an intermediate transverse wall, with at least one fluid opening therein; a valve displacement member extending from the proximal side of the wall; a transverse resilient diaphragmic sealing valve member mounted in the housing adjacent the transverse wall in sealing engagement therewith to prevent fluid flow through the transverse wall opening, the diaphragmic valve member having at least one fluid opening therein radially displaced from the transverse wall opening; and a valve stem slidably extending through the transverse wall member and having a first portion protruding



beyond the proximal side of the wall, and a second portion disposed in proximal relationship to the diaphragmic valve member such that depression of the stem causes resilient deflection of the diaphragmic valve member out of sealing engagement with the transverse wall to permit fluid flow between and through the valve member opening and the transverse wall opening; and

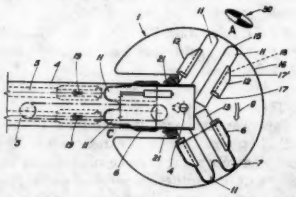
the other valve housing comprising a stem opposing surface disposed in engageable axial alignment with the stem first portion and a normally closed valve mechanism having a resiliently displaceable valve closure, disposed in engageable axial alignment with the valve displacement member such that upon engagement of the housings the the stem opposing surface depresses the stem and the valve displacement member displaces the closure to permit fluid flow through the dispensing assembly.

4,564,133

APPARATUS AND METHOD FOR RAPID LOADING OF PANTYHOSE ONTO A STOCKING FINISHING MEDIUM

Vinicio Gazzarrini, Florence, Italy, assignor to Solis s.r.l., Florence, Italy

Filed Sep. 17, 1984, Ser. No. 651,664
Claims priority, application Italy, Sep. 19, 1983, 9517 A/83
Int. Cl.[4] A41H *43/02*
U.S. Cl. 223—39 **20 Claims**



1. Apparatus for rapid loading of pantyhoses onto a stocking finishing machine having a pneumatic reversing mechanism including two tubes for receiving the legs of the pantyhose, comprising:

a carrousel structure including at least two intermittently rotating radially arranged arms, each of said arms including means for supporting a panty portion of the pantyhoses;

means for engaging an elastic edge portion of the panty portion for opening thereof and stretching it into a generally rectangular configuration, removing the panty portion from said supporting means and superimposing the panty portion on said tubes and reversing the panty portion thereon while said pneumatic reversing machanism draws the legs into said tubes;

track means extending radially from the center of said carrousel towards the outer periphery thereof; and

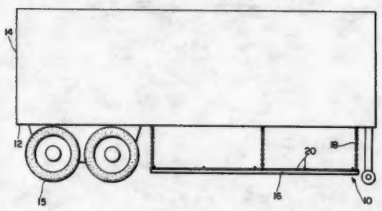
means for moving said engaging means with the pantyhose thereon from said supporting means to said tubes.

4,564,134

PALLET STORAGE RACK

Charles Seibert, Rte. 2, Box 164, Penfield, Ill. 61862

Filed Jan. 31, 1983, Ser. No. 462,447
Int. Cl.⁴ B60R *9/00*; B62D *25/20*
U.S. Cl. 224—42.41 **4 Claims**



1. A pallet storage rack for the trailer of a tractor-trailer truck comprising:

a rigid support frame comprising a first plurality of elongated metallic elements disposed generally parallel to each other at spaced intervals and a second plurality of elongated metallic elements disposed generally parallel to each other and at a generally right angle to said first plurality of elements, said first and second plurality being disposed substantially coplaner and being rigidly secured to each other where adjacent, said plurality of elements being dimensioned to form a generally planar rectangular grid support frame disposed under the trailer of a tractor trailer truck against the underside thereof forward of the rear wheels without lateral extension; and

a plurality of metal chains each connected at one end to the trailer and at the other end to said support frame and being selectively variable in effective length, said chains being at least four in number, at least four of said chains being connected to the trailer at the lateral extremeties thereof and to said support frame at the corners thereof,

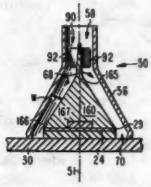
whereby the spacing between the underside of the trailer and said support frame may be relatively varied from a first position adjacent the underside of the trailer when it is desirable to carry the pallets internally of the trailer to a second position spaced approximately sixty percent of the distance between the underside of the trailer and the ground when it is desirable to carry the pallets externally of the trailer to thereby free the internal space of the trailer for cargo.

4,564,135

CHIP CARRIER SOLDERING TOOL

Anthony J. Barresi, Hammonton, and Leonard Nelson, Cherry Hill, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 29, 1983, Ser. No. 566,826
Int. Cl.⁴ B23K *1/12*
U.S. Cl. 228—6.2 **10 Claims**



6. Apparatus for use with surface mounted chip carriers, comprising:

a conduit, having lateral walls, an inlet end, an outlet end, and a flared portion in which the interior cross section of said conduit increases with increasing distance from said inlet end toward said outlet end, for conducting hot gas;

a diverter device within said flared portion, said diverter device having a main portion whose cross section increases with increasing distance from said inlet end toward said outlet end of said conduit;

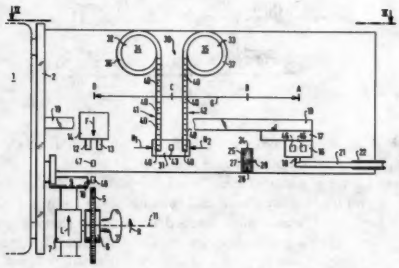
said diverter device being positioned within said flared portion to divert said flow from the central portion of said conduit and to leave a channel for gas flow surrounding said diverter within said flared portion.

4,564,136

APPARATUS FOR THE AUTOMATIC SOLDERING-ON OF HARD METAL TEETH

Peter Kähny, Auenwald, and Norbert Gerling, Aspach, both of Fed. Rep. of Germany, assignors to Kahny-Maschinenbau GmbH, Backnang-Steinbach, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,317
Int. Cl.⁴ B23K *13/00*
U.S. Cl. 228—6.1 **15 Claims**



1. Apparatus for the automatic soldering of hard metal teeth onto the prongs of a circular saw blade, wherein said apparatus comprises

a soldering mount being movable to and fro between a soldering mount tooth pick up position and a soldering position in which a hard metal tooth, on the top of which a solder platelet is placed having a drop of a flux on its bottom side, is held and pressed by said soldering mount from below against a prong of the circular saw blade during the heating-up, soldering and cooling-down operations,

a tooth transport means being movable to and fro between a tooth feeding means placing ready individual hard metal teeth with a defined orientation and said soldering mount tooth pick up position, said tooth transport means being adapted at each to and fro going stroke of its movement to pick up one individual hard metal tooth from said tooth feeding means, to transport said individual hard metal tooth and to transfer it to said soldering mount at said soldering mount tooth pick up position,

a solder platelet transport means being movable to and fro between a solder platelet pick up position and a solder platelet deposition position which is arranged on the movement path of said soldering mount, said solder platelet transport means being adapted at each to and fro going stroke to pick up one individual solder platelet at said solder platelet pick up position, to transport said individual solder platelet to said solder platelet deposition position and to place said solder platelet at said deposition position on the top of a hard metal tooth being held by said soldering mount, and

a flux feeding means being adapted for placing a drop of the flux on the bottom side of each solder platelet.

4,564,137

METHOD OF MAKING A CLUTCH ROTOR FOR AN ELECTROMAGNETIC CLUTCH

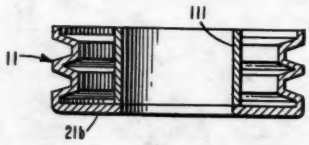
Yasuo Nakamura, Isesaki, Japan, assignor to Sanden Corporation, Japan

Continuation-in-part of Ser. No. 511,961, Jul. 8, 1983. This application Jul. 27, 1983, Ser. No. 517,703

Claims priority, application Japan, Jul. 30, 1982, 57-133260

Int. Cl.[4] B23K *31/02*

U.S. Cl. 228—173.6 **8 Claims**



1. A method of making a clutch rotor for use in an electromagnetic clutch consisting of the steps of:

(a) forming a cup-shaped blank with a straight, generally cylindrical flange wall and bottom plate having an aperture sized to accommodate a drive shaft so that the clutch rotor is rotatably supported on the drive shaft by pressing a piece of sheet metal into said cup-shaped blank and punching out said aperture;

(b) forming an annular outward bulge portion in said flange wall by a pressing operation;

(c) pressing said bulge portion into at least one approximately V-shaped inwardly projecting groove wherein the walls of said V-shaped groove each comprise a single layer of sheet metal;

(d) forming a final V-shaped groove adapted to receive a drive belt by applying a roller working operation to said approximately V-shaped groove; and

(e) welding an inner cylindrical member to a radial inner surface of said bottom plate of cup-shaped blank.

4,564,138

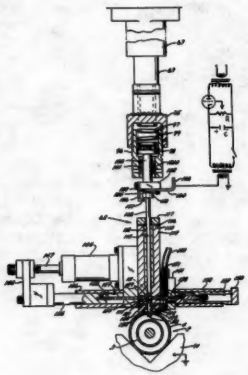
GAS PRESSURIZED SHOCK ABSORBER ASSEMBLY

Michael R. Bethell, Monroe; Michael G. Gaines; James F. Mowat, Jr., both of Temperance, all of Mich.; Roger D. Wheeler, Sylvania, and Richard P. Woidke, Toledo, both of Ohio, assignors to Monroe Auto Equipment Company, Monroe, Mich.

Filed Sep. 17, 1984, Ser. No. 610,313

Int. Cl.[4] B65B *31/04*

U.S. Cl. 228—176 **8 Claims**



1. A method for gas pressurizing a sealed completely assembled, but unpressurized, shock absorber assembly, said assembly having a pressure tube, a piston reciprocatable in said pressure tube, a piston rod affixed to said piston and reciprocatable with respect to said pressure tube and a weldable metallic reserve tube coaxial with and radially outwardly spaced from said pressure tube, said pressure tube and said reserve tube being sealingly engaged to form a sealed unit containing a liquid and having a substantially liquid free space, said method comprising the following steps performed in succession in a gas pressurizing apparatus:

(a) placing said shock absorber assembly in a fixed position in a moveable holding fixture with the piston rod extended, in a said gas pressurizing apparatus;

(b) piercing an opening in said reserve tube said opening being contiguous with said liquid free space;

(c) placing said pierced opening in sealed fluid flow communication with a working chamber of said gas pressurizing apparatus;

(d) passing a pressurizing fluid through said working chamber and said opening into said liquid free space;

(e) placing a continuous annular portion of a weldable plug in contact with a continuous annular portion of the exterior of said reserve tube surrounding said pierced opening;

(f) welding said plug to said reserve tube to seal said pierced opening for maintaining said shock absorber gas pressurized; and

(g) removing said assembly from said holding fixture.

4,564,139

PACKAGING MEANS FOR FILLING MATERIALS WHICH ARE CAPABLE OF FLOW, HAVING A RE-CLOSABLE OPENING MEANS

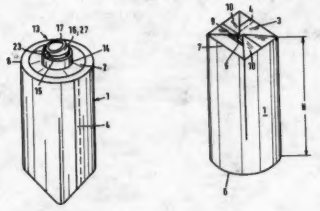
Wilhelm Reil, Bensheim, Fed. Rep. of Germany, assignor to Tetra Pak Developpement S.A., Pully, Switzerland

Filed Apr. 4, 1983, Ser. No. 481,634

Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217156

Int. Cl.⁴ B65D *3/10*

U.S. Cl. 229—5.5 **7 Claims**



1. In a container to be filed with materials which are capable of flowing comprising a side wall of a sheet of carrier material coated with a thermoplastic material, and having longitudinal edges joined at a longitudinal seam to form a generally tubular body; a bottom formed by folding a bottom portion of said side wall at a fold line in the side wall, and in a plane transverse the axis of the tubular body, the bottom including a plurality of triangular flaps defining a quadrangular configuration and folded over to lie against at least one adjacent panel portion of the transversely folded bottom portion of said side wall, and a top disposed at a top edge of the tubular body, said top being formed of said thermoplastic material and affixed onto said top edge by injection molding the top onto said tubular body; the improvement wherein at least two of said flaps disposed opposite each other are folded inwardly at said fold line to lie along the plane of said bottom against said panel portion of said bottom portion and are affixed in such position, and wherein wherein said bottom has a transverse sealing seam extending at least between said fold lines and to the apexes of said oppositely-disposed, inwardly folded triangular flaps.

4,564,140

STACKER SUPPORTING DEVICE IN AUTOMATIC MONEY DEPOSITING AND DISBURSING MACHINE

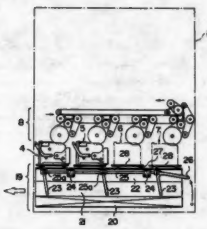
Eiichi Kokubo; Junichi Arikawa; Kowichi Goi, and Shinichi Imura, all of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1982, Ser. No. 406,169

Claims priority, application Japan, Sep. 2, 1981, 56-137973

Int. Cl.⁴ B65G *11/04*

U.S. Cl. 232—57.5 **3 Claims**



1. An automatic money depositing and disbursing machine wherein notes inserted into a transacting port are fed into a discriminating section to detect the presence or absence of abnormal notes and to receive normal notes and wherein at least a portion of the received notes are used as notes to be disbursed, which machine comprises: a housing for containing the several elements of the machine, note circulating delivery passage means for delivering along a common route received notes and notes to be disbursed, note transfer means disposed below said note circulating delivery passage for transferring notes between said note delivery passage and at least one box for containing notes therein, a plurality of boxes for containing notes therein and movably positioned below and adjacent said note transfer means, and stacker supporting means disposed below said note transfer means for movably supporting said plurality of boxes, said note transfer means including means for receiving notes from the note circulating delivery passage means, and note removing means to suck notes from the boxes supported on the stacker supporting means so as to transfer the notes to the note circulating delivery passage means, said stacker supporting means including a stationary rail portion attached to the bottom of the housing and a movable portion adapted to carry the boxes thereon, said movable portion slidably supported on the stationary rail portion for movement in horizontal opposite directions to permit removal of the boxes from the housing and to permit insertion of the boxes into the housing in either horizontal direction, and pivot means provided on said movable portion for vertically raising the boxes relative to the movable portion and toward the means for receiving notes and the note removing means of the note transfer means to permit notes to be transferred to and removed from said boxes by said note transfer means, and for vertically lowering the boxes away from the means for receiving notes and note removing means of the note transfer means to permit the boxes to be horizontally slidably removed from the housing without contacting the note transfer means.

4,564,141

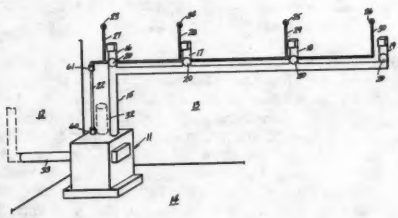
APPARATUS AND METHOD FOR DOMESTIC HOT WATER CONTROL

Douglas J. Montgomery, Trumbull, Conn.; Leonard H. Goldstein, Hyde Park, and Ernest Stumbo, Clinton Corners, both of N.Y., assignors to Doleer Electronics, Inc., Clinton Corners, N.Y.

Filed Nov. 5, 1984, Ser. No. 668,286

Int. Cl.⁴ F23N *5/02*

U.S. Cl. 236—20 R **22 Claims**



1. In a domestic hot water system which comprises a means providing a source of hot water, an aquastat for controlling the heating of hot water at said source between predetermined temperature limits, and a manifold leading from said source to one or more user stations;

means for disabling said aquastat during predetermined intervals of time,

a first temperature sensing means closely positioned to said source on said manifold, a second temperature sensing means positioned on said manifold and spaced from said first sensing means, away from said source,

comparison means responsive to said first and second sensing means for comparing the temperatures sensed,

means responsive to said comparison means sensing a predetermined temperature difference for enabling said aquastat to heat the water at said source during said predetermined intervals of time.

4,564,142

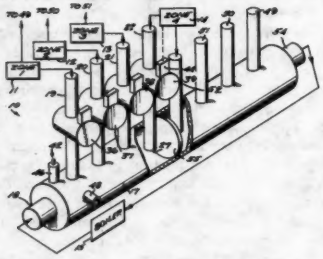
HYDRONIC SYSTEM WITH CIRCULATORS CONNECTED TO A HEADER

Clarence W. Cleer, Jr., R.D. 2, Box 90, Kane, Pa. 16735

Filed Jun. 1, 1984, Ser. No. 616,186

Int. Cl.[4] F24D *3/00*

U.S. Cl. 237—8 R **12 Claims**



1. A hydronic multi-zone heating installation for connection to a water heating device, and comprising: a header having an inlet adapted to be connected to the water heating device; a plurality of supply pipes operatively connected at a first open end thereof to said header in fluid communication therewith, and adapted to be connected at a second end thereof to a heating zone; means for mounting said header so that it extends generally horizontally; a circulator connected to each supply pipe for circulating liquid from said header through said supply pipe to a heating zone;

means for eliminating air from liquid in said instllation, said means comprising: said header having a significantly larger cross-sectional area than the inlet thereto, and than each of said supply pipes; each of said supply pipes extending into said header a significant distance so that during operation said first open end of each of said supply pipes will always be below the level of liquid in the header; and air vent means operatively connected to a top portion of said header above the level of liquid for venting air therefrom;

a plurality of return pipes connected to said header, and an outlet extending from said header; said supply pipes connected to said header adjacent the inlet to said header, and said return pipes connected to said header adjacent the outlet from said header, and wherein each of said return pipes having a first open end thereof extending from the top or bottom of the header inwardly into said header to approximately the center line of said header; and

said header being completely open so that liquid may flow freely through said header from the inlet to the outlet thereof.

4,564,143

HOT-BLAST NOZZLES, PARTICULARLY FOR BLAST FURNACES

Francois Touze, Chateau de Logne, 57310 Guenange, France

Filed May 3, 1982, Ser. No. 374,151

Claims priority, application France, May 15, 1981, 81 09772

Int. Cl.[4] B05B *15/00*

U.S. Cl. 239—132.3 **19 Claims**

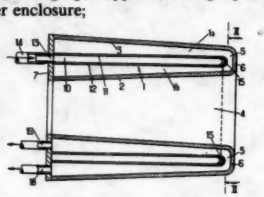
1. A hot-blast nozzle, particularly for a blast furnace, comprising:

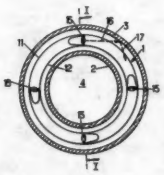
an outer hollow tubular enclosure defined by two substantially cylindrical walls extending between a front part or and a rear part and through which a current of a supplied cooling liquid can flow,

an inner hollow tubular chamber substantially coaxial with the outer enclosure and disposed at a radial distance from the substantially cylindrical walls thereof, said inner chamber having a rear end located at said rear part of the outer enclosure and a front end located in the immediate vicinity of said snout;

liquid supply means for connecting said inner enclosure to a cooling liquid supply network; and

means for discharging a supplied cooling liquid connected to the outer enclosure;





characterized in that said nozzle further comprises at least one orifice located substantially in the front end of the inner chamber and opening tangentially into said enclosure so as to communicate to the supplied cooling liquid a tangential component; and characterized in that the outer enclosure has inwardly no obstacle likely to oppose the movement of the cooling liquid, whereby said orifice and said obstacle-free outer enclosure are such that the cooling liquid is projected against the inner face of the snout of the enclosure and then set in free helical rotational motion within the outer enclosure between the snout and the discharge means.

4,564,144

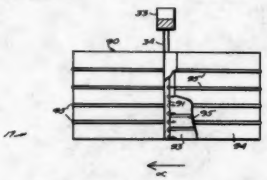
STATIONARY DIFFUSER

Oliver A. Laakso, Haralyn (West), #2 Middle Rd., Smiths Parish, Bermuda (3-18)

Division of Ser. No. 498,801, May 27, 1983, Pat. No. 4,441,224, which is a division of Ser. No. 374,763, May 4, 1982, Pat. No. 4,468,319. This application Jan. 31, 1984, Ser. No. 575,683

Int. Cl.[4] B05B *3/02*

U.S. Cl. 239—222.13 **8 Claims**



1. A fluid introducing structure comprising: a rotatable substantially linear nozzle member having means defining a plurality of spaced fluid-flow providing openings therein; and a substantially cylindrical wall having solid exterior surfaces, said wall attached to said nozzle member at a first end thereof and rotatable therewith, and disposed adjacent said nozzle member at a second end thereof; said wall having a continu-

ously decreasing cross-sectional area from said first end to said second end thereof.

4,564,145

ELECTROMAGNETIC FUEL INJECTOR

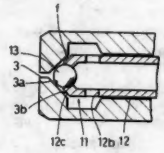
Shigetaka Takada, Obu; Toshiro Makimura, Nagoya, and Mamoru Matsubara, Obu, all of Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Aichi, Japan

Filed May 17, 1983, Ser. No. 495,152

Claims priority, application Japan, Aug. 4, 1982, 57-119438[U]; Nov. 1, 1982, 57-166868[U]

Int. Cl.⁴ F02M *51/06*

U.S. Cl. 239—585 **3 Claims**



1. In combination with an electromagnetic fuel injector for an internal combustion engine including a valve housing provided with a fuel injection nozzle and a valve seat at its front end and a guide hole extending along the axis of said valve housing, a valve body slidably inserted into said guide hole, said valve body being composed of a cylindrical slide member having a fuel passage therein and a substantially spherical valve member fixed on the tip of said slide member, a compression spring adapted to normally urge said valve body so as to close said fuel injection nozzle, an armature fixed to the rear end of said valve body, a fixed magnet core having a front end opposite to the rear end of said armature and having a fuel passage extending through its central portion, an exciting coil surrounding said fixed magnet core and an electromagnetic housing combining said valve housing with said fixed magnet core, wherein said electromagnetic fuel injector is adapted to discharge pressurized fuel when said exciting coil receives control signal to open said valve body, the improvement comprising a fuel outlet opening formed at the front portion of said slide member, an annular fuel passage leading from said fuel outlet opening to said valve seat and an annular restricted portion provided along a definite length of said annular fuel passage.

4,564,146

PAPER SHREDDING MACHINE

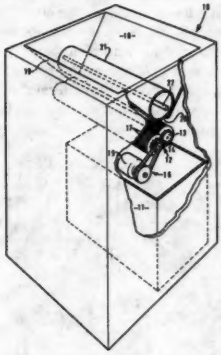
Stephen F. Bleasdale, Holmfirth, England, assignor to Ofshred Limited, Huddersfield, England

Filed Jul. 5, 1983, Ser. No. 510,603

Int. Cl.⁴ B02C *18/22*

U.S. Cl. 241—236 **10 Claims**

1. A paper shredding machine for shredding paper sheets comprising: a housing having inclined guide surfaces spaced apart by a gap; a cutter assembly disposed within said housing and beneath said gap; drive means for driving said cutter assembly; a non-positively driven, free-wheeling hollow tubular closure member rotatable about its longitudinal axis, normally resting on said guide surfaces while covering said gap, and mounted for limited movement relative to said guide surfaces; and pin means not connected to said hollow tubular closure member and extending from the housing into said hollow tubular closure member with a radial clearance between said pin means and said hollow tubular closure member; wherein when said hollow tubular closure member is in a first position relative to said housing, said hollow tubular closure member rests upon said guide surfaces and closes said gap, and when said hollow tubular closure member is in a second position relative to said housing, a rectilinear infeed opening is formed between said hollow tubular closure member and at least one of said guide surfaces so that paper sheets can be fed to the cutter assembly along a path transverse to the length of said infeed opening with said hollow tubular closure member rolling on said paper sheets and displacement of said hollow tubular member being limited by said pin means.



4,564,147

WINDING MACHINE

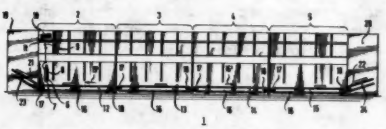
Joachim Rohner, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Aug. 13, 1984, Ser. No. 640,087

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1983, 3329362

Int. Cl.⁴ B65H *54/20, 67/06*

U.S. Cl. 242—35.5 A **6 Claims**



1. In a winding machine having a plurality of sequentially disposed winding sections and end sections, each of said winding sections comprising a plurality of winding stations, and a plurality of separate bobbin tube transporters each being disposed at a respective one of said winding sections and each having a bobbin supporting surface being selectively adjustable for movement in opposite directions for discharging empty bobbin tubes from said winding sections to said end sections, said bobbin tube transporters of all of said winding sections being mutually sequentially aligned.

4,564,148

TOILET PAPER DISPENSING SYSTEM

Michael B. Wentworth, 7015 Buckingham Rd., Berkeley, Calif. 94705

Filed Jun. 25, 1984, Ser. No. 624,061

Int. Cl.⁴ B65H *19/04*

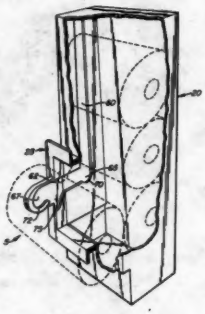
U.S. Cl. 242—55.3 **13 Claims**

1. A toilet paper roll dispenser comprising:

a chamber adapted to be mounted within a stud wall, said chamber having internal dimensions sufficient to accommodate a stacked plurality of rolls to be dispensed, said chamber having a rear wall, first and second side walls, and a front wall, said front wall being formed at a lower portion thereof with with an opening sized to allow the rolls to pass therethrough for loading and dispensing;

first and second guides, having respective substantially uninterrupted first and second vertical channels, each extending upwardly along a respective one of said side walls, and respective first and second horizontal channels, each extending from a lower point on the corresponding vertical channel, through and beyond said opening in said front wall, to a point outside said chamber;

said first and second guides opening toward one another in facing relationship and having lateral dimensions sized to accommodate spindle ends extending beyond the end faces of the rolls; and



first and second roll holder means, associated with said first and second horizontal channels, respectively, and located at respective terminal regions thereof, for establishing a position at the ends of said horizontal channels at which a roll is disposed for use;

at least said first horizontal channel being formed with an open segment to allow insertion of the spindle ends into said first and second horizontal channels, said horizontal channels and said vertical channels being configured relative to said opening and said chamber to permit a roll, the spindle ends of which are thus inserted into said horizontal channels, to pass through said opening and up into said chamber.

4,564,149

DEVICE FOR JOINING TOGETHER IN A REGISTERED AND/OR ABUTTING MANNER THE ENDS OF TWO PAPER OR CARDBOARD WEBS WHICH UNWIND FROM TWO DIFFERENT WHEELS POSITIONED ON A REEL STAR UNIT OF TWO OR MORE POSITIONS

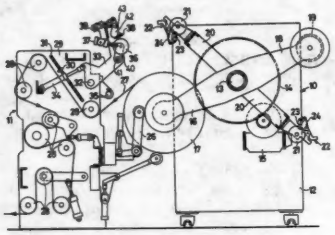
Piero Barzano', Bergamo, Italy, assignor to IMS S.p.A., Calcinate, Italy

Filed Dec. 28, 1983, Ser. No. 566,339

Claims priority, application Italy, Jan. 7, 1983, 20416/83[U]

Int. Cl.⁴ B65H *19/14, 19/18*

U.S. Cl. 242—58.1 **4 Claims**



1. A device for joining together in a registered relationship a tail end of a first web unwound from a first reel with a lead end of a second web of a second reel, comprising:

a star reel unit having a pair of arms rotatably supporting said first reel and another pair of arms rotatably supporting said second reel;

means for rotating said star reel unit for positioning said second reel in place of said first reel when said first reel is near to expire but continues to have the first web unwound therefrom;

means for cutting said first web to provide said tail end of said first web and for splicing said tail end of said first web to said lead end of said second web comprising, cutting and splicing support arms pivotally mounted on a machine frame, means to pivotally move said cutting and splicing support arms between an inoperative position and an operative position when said first web is slowing down, a movable cutting blade mounted on said cutting and splicing support arms, a bracket pivotally mounted on said star reel unit, a counterblade mounted on said bracket for cooperating with said cutting blade when in said operative position to cut said first web, a splicing roller rotatably supported on said cutting and splicing support arms, and means operatively associated with said cutting blade and roller to actuate said cutting blade and roller to produce the cutting and splicing when said cutting and splicing support arms are in the operative position and said first web is stopped;

means for rotating said second reel;

a first photoelectric means on said star reel unit for controlling said means for rotating said second reel for positioning said second reel in a predetermined stationary angular position in which said lead end faces said first web; and

second photoelectric means responsive to register marks on said first web for controlling slowing down and momentarily stopping of said first web in a position in which said tail end of said first web is in registered joining relationship with said stationary angularly positioned lead end of said second web and for substantially simultaneously actuating said cutting and splicing means and restarting movement of said joined webs.

4,564,150

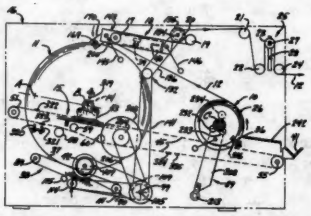
APPARATUS FOR CONTINUOUSLY SUPPLYING A WEB OF SHEET MATERIAL

John F. Keene, Roscoe; Bengt L. Kuller, Rockford, and Robert G. Kemmeter, Rockton, all of Ill., assignors to Enkel Corporation, Rockford, Ill.

Filed Nov. 28, 1983, Ser. No. 555,823

Int. Cl.⁴ B65H *19/18, 19/30, 23/08*

U.S. Cl. 242—58.1 **15 Claims**



1. In an apparatus for continuously supplying a web of sheet material, the combination of, a base, means on said base to support first and second circular rolls of web to turn about parallel axes, means for guiding the web from said first roll as the web is unwound from the latter at a preselected linear speed, a frictional drive member frictionally engaging the circular periphery of said second roll and operable when driven to rotate said second roll, clutch means, a power actuator operable through said clutch means to drive said frictional

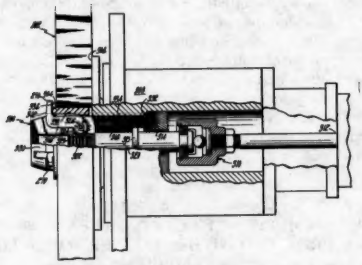
drive member at one speed and accelerate said second roll to a peripheral speed near the linear speed of the web from said first roll, means responsive to the linear speed of the web from said first roll and operable after operation of said power actuator to drive said frictional drive member at a different speed through said clutch means to cause said frictional drive member to rotate said second roll at a peripheral speed matching the linear speed of the web from said first roll, and means subsequently operable to attach the web from said first roll to the web on said second roll.

4,564,151

CORE LATCH CHUCK ASSEMBLY

Christopher Pali, Fort Wayne, Ind., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed Jun. 4, 1984, Ser. No. 617,310
Int. Cl.[4] B65H *75/24, 19/12*
U.S. Cl. 242—68.3 **9 Claims**



1. A core latch chuck assembly for securing a roll of wound material having an annular core for rotational movement which comprises:

a generally cylindrical casing sized to have a diameter less than the internal diameter of the core;

motion limiting means for slidably displacing the cylindrical casing between a mounting position wherein the casing extends within the core of the roll and an unloading position wherein the casing is removed from the core;

at least one core latch pivotally mounted within the casing, said latch having a locking position wherein the latch extends from the casing to engage the roll and a withdrawn position wherein the latch is maintained within the casing, said latch additionally including gear teeth;

a shaft slidably secured within the casing and including rack teeth mating with the gear teeth such that sliding motion of the shaft relative to the casing may cause the latch to rotate between the locking position and the withdrawn position; and

actuator means connected to the shaft such that displacement of the actuator means results in displacement of the shaft, said shaft being connected to the casing by the motion limiting means for allowing relative motion between the shaft and the casing to effect positioning of the latch.

4,564,152

APPARATUS FOR STORING AND TRANSPORTING WIRE ON REELS AND FOR DISPENSING WIRE FROM THE REELS

A. A. Herriage, P.O. Box 967, Jasper, Tex. 75951

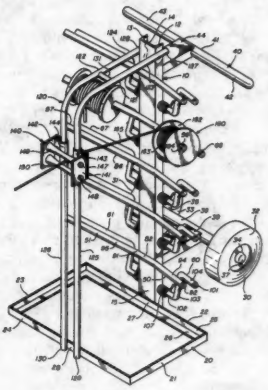
Filed Jun. 18, 1984, Ser. No. 621,266
Int. Cl.[4] B65H *17/40, 17/46*
U.S. Cl. 242—86.5 **12 Claims**

1. A new and improved apparatus for storing and transporting a plurality of reels of wire, each reel having an axial bore therethrough, and for dispensing wire from any of the reels, comprising:

(a) a frame including a front side and a back side;

(b) a base connected to said frame;

(c) a plurality of spindles connected to said frame and projecting upwardly from said frame, each of said spindles being adapted for insertion into the bore of the reel so that the reel may be mounted upon said spindle and the weight of the reel retains the reel upon said spindle and so that the reel may rotate as wire is pulled from the reel;



(d) means for restricting the wire as a tension force pulls the wire from the reel mounted upon said spindle so that the application of the tension force to the wire does not lift the reel from said spindle and so that the wire may be dispensed at a desired height, said restricting means includes a guide having a passageway therethrough and a track, with said guide being mounted to and movable along said track, and with said track being located forward of said spindles and being connected to said frame; and

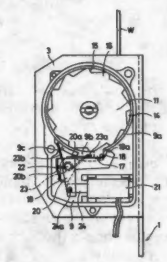
(e) means for stopping the rotation of the reel mounted upon said spindle when wire ceases to be pulled from the reel.

4,564,153

RETRACTOR

Masaru Morinaga, Yamato, and Shinobu Mogi, Fujisawa, both of Japan, assignors to NSK-Warner K.K., Tokyo, Japan

Filed Dec. 8, 1983, Ser. No. 559,212
Claims priority, application Japan, Dec. 16, 1982, 57-189214[U]; Jul. 29, 1983, 58-117136[U]
Int. Cl.[4] A62B *35/00;* **B65H** *75/48*
U.S. Cl. 242—107 **9 Claims**



1. A retractor having a webbing take-up shaft rotatably

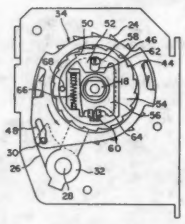
supported by a base, biasing means for biasing said take-up shaft in a webbing take-up direction, said biasing means including plural parts, a connecting member for connecting one part and another part of said biasing means, locking means capable of assuming a locking position in which it is engaged with said connecting member to prevent the biasing force of said other part of said biasing means from acting on said take-up shaft and a non-locking position in which it is not engaged with said connecting member to permit the biasing forces of said one part and said other part of said biasing means to act on said take-up shaft, said locking means having an engaging portion, control means for controlling said locking means, means for permitting at least the engaging portion of said locking means engaged with said connecting member to move toward said non-locking position without substantially affecting said control means when a force greater than a predetermined value which tends to bring said locking means toward said non-locking position acts on said locking means after said locking means has been brought to said locking position by said control means, and a cam member movable in a predetermined range in response to movement of said take-up shaft and adapted, when said take-up shaft moves in a webbing draw-out direction, to move to one end of said predetermined range and engage said locking means in said locking position to thereby bring at least said engaging portion of said locking means to said non-locking position and, when said take-up shaft moves in the webbing take-up direction, to move to the other end of said predetermined range and to be disengaged from said locking means, said locking means including a stop spring with a first portion and a second portion and a stop lever having said engaging portion thereon, said stop spring being operatively connected to said control means, said first portion being in contact with said stop lever for bringing said stop lever into engagement with said connecting member, said second portion being in contact with said stop lever for bringing said stop lever into disengagement from said connecting member, and said permitting means including said first portion which flexes for permitting said engaging portion to move toward said non-locking position.

4,564,154

SAFETY BELT RETRACTOR

Juichiro Takada, 3-12-1 Shinmachi, Tokyo, Japan

Filed Nov. 10, 1983, Ser. No. 550,763
Claims priority, application Japan, Nov. 11, 1982, 57-196792
Int. Cl.[4] B65H *75/48*
U.S. Cl. 242—107.4 B **3 Claims**



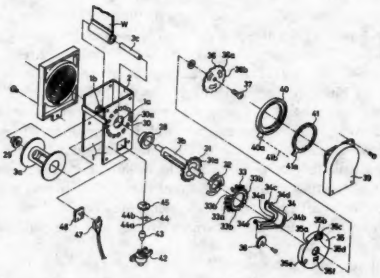
1. A safety belt retractor having a frame; a takeup shaft rotatably journalled on the frame and normally biased to wind a safety belt therearound; a ratchet wheel coaxially affixed to the shaft; an inertia member coaxially mounted on the takeup shaft for rotation relative therto; a clutch mechanism composed of a lock ring coaxially and rotatably mounted on the takeup shaft, the lock ring having internal teeth and a cam slot, and engagement means for engaging at least one of the internal teeth of the lock ring to couple the lock ring with the takeup shaft for rotation therewith when there is a difference between the speeds of rotation of the takeup shaft and the said inertia member; and a pawl pivotably supported on said frame and having a cam follower affixed thereon and received in the cam slot in the lock ring; the pawl being pivotably movable into an operative position in which it engages the ratchet wheel in response to rotation of the lock ring in the belt-unwinding direction when the lock ring is coupled to the takeup shaft, and also pivotably movable into an inoperative position out of engagement with the ratchet wheel in response to rotation of the lock ring in the belt-winding direction when the lock ring is uncoupled from the takeup shaft, characterized in that the engagement means includes a retainer affixed on the shaft, a carrier having at least one tooth engageable with an internal tooth of the lock ring, means coupling the retainer to the carrier for rotation therewith and for movement in a direction substantially diametrically relative to the shaft between a first position in which the carrier tooth is out of engagement with any lock ring tooth and a second position in which the carrier tooth engages a lock ring tooth, thereby to couple the retainer to the lock ring for rotation in the belt-unwinding direction, the carrier also being movable transversely to said diametrical direction relative to the retainer, a pin coupling the carrier to the inertia member at a location spaced apart radially from the shaft and substantially 90° from the said diametrical direction along which the carrier is movable relative to the retainer, and an inertia spring engaged between the retainer and carrier biasing the carrier toward the first position; and further characterized in that the cam slot includes an extension portion for allowing the lock ring to rotate in the belt-unwinding direction without moving the cam follower in a direction to disengage the pawl from the ratchet wheel when the pawl is in the operative position.

4,564,155

EMERGENCY LOCKING TYPE RETRACTOR PROVIDED WITH A TAKE-UP FORCE LOCKING MECHANISM

Masahiro Tsukamoto, Fujisawa, Japan, assignor to NSK-Warner K. K., Tokyo, Japan

Filed Jun. 18, 1984, Ser. No. 621,569
Claims priority, application Japan, Jun. 29, 1983, 58-99398[U]
Int. Cl.[4] A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.4 A **6 Claims**



1. An emergency locking type retractor comprising:

reel shaft means biased in a belt take-up direction and rotatably supported by a base member;

belt take-up force locking means capable of assuming an operative condition and an inoperative condition, said locking means preventing a belt take-up force from being applied to a belt at at least one point during belt wearing in said operative condition and incapable of preventing the belt take-up force from being applied to the belt in said inoperative condition;

emergency locking means capable of assuming first and second conditions, said emergency locking means permitting said reel shaft means to rotate freely in the first condition and being operated, upon detecting a speed change of a vehicle body over a predetermined value, to act on the reel shaft

means to prevent draw-out of the belt in the second condition; and

releasing means for bringing said belt take-up force locking means into the inoperative condition in response to change of said emergency locking means from the first condition to the second condition when said take-up force locking means is in said operative condition.

4,564,156

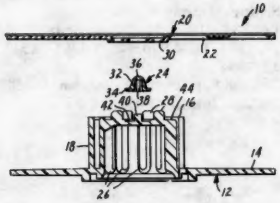
VIDEOCASSETTE WEAR BUTTON

Claude E. Cybulski, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 15, 1984, Ser. No. 621,113

Int. Cl.⁴ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—197 **5 Claims**



1. In a tape spool for a tape cassette, which spool comprises two flanges connected by a hub having a cylindrical tape-winding surface and a wear button projecting beyond the flanged hub at the axis of the spool, the improvement comprising:

a stud including an outer surface and projecting from said hub at and coaxial with said axis; and

a separate piece mounted on said stud and including a blind bore adapted to accept said stud in an interference fit which generates sufficient friction between said stud surface and said separate piece to prevent relative movement between said stud and said separate piece during normal usage of said tape spool in a said tape cassette, said separate piece further including a terminal outer surface along said axis which is rounded and projects beyond one of said flanges to serve as said wear button.

4,564,157

MAGNETIC RECORDING TAPE CASSETTE

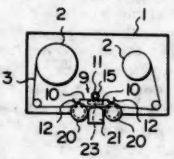
Kengo Oishi, and Osamu Suzuki, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1984, Ser. No. 625,018

Claims priority, application Japan, Aug. 15, 1983, 58-126352[U]

Int. Cl.⁴ G11B *15/32, 15/60*

U.S. Cl. 242—199 **7 Claims**



1. A magnetic recording tape cassette suitable for recording and/or playing digital signals magnetically recorded in a multiplicity of narrowly spaced tracks on a magnetic tape, comprising a pair of tape hubs, said magnetic tape being wound around the hubs, a cassette casing for accommodating therein the tape hubs and the magnetic recording tape, a pair of guide rollers rotatably mounted in the cassette to guide the tape between said reels and past a front side of the cassette casing, a magnetic head receiving opening disposed centrally on said front side of said casing and through which a magnetic recording and/or playback head can be inserted to contact said tape, a pair of tape guide openings disposed on either side of said magnetic head receiving opening on said front side of said cassette casing, a pair of tape supports within said casing and respectively disposed on opposite sides of said magnetic head receiving opening at the positions of said tape guide openings, and resilient means mounting said tape supports yieldably biasing said supports towards said tape guide openings and permitting displacement of said tape supports away from said openings, the tape supports being of sufficient with and suitably positioned to be displaced away from the magnetic recording tape by a respective pair of tape guide members provided in a tape recorder on opposite sides of a magnetic head in said recorder, each tape guide member being provided with a pair of collars having inside portions spaced from each other in the direction of tape width of said tape by a distance substantially equal to the width of said tape, the collars having outside portions spaced from each other by a distance smaller than the width of the respective guide openings to permit insertion of said tape guides into said tape guide openings, said collars including means for abutting against the corresponding tape support to push the same away from the recording tape with the recording tape accommodated between the collars when the cassette is loaded into the tape recorder such that during operation the tape runs in a fixed path relative to said head under the guidance of the pair of tape guide members.

4,564,158

FISHING REEL CLUTCH RELEASE MECHANISM

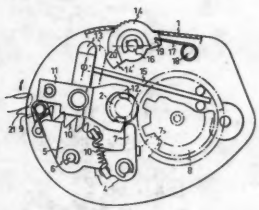
Börje S. Moosberg, and Jarding U. Karlsson, both of Mörrum, Sweden, assignors to Abu Aktiebolag, Svangsta, Sweden

Filed Oct. 26, 1983, Ser. No. 545,428

Claims priority, application Sweden, Nov. 9, 1982, 8206342

Int. Cl.⁴ A01K *89/00*

U.S. Cl. 242—220 **12 Claims**



1. A fishing reel, comprising:

a rotatable line spool;

a transmission means for rotating the line spool;

a disengageable clutch member (12) for engaging the transmission means with the line spool;

a disengaging mechanism movable between an engaging and a disengaging position corresponding to an engaging and a disengaging position of said clutch member, said disengaging mechanism having a lever (5) attached thereto, said lever having a protruding arm forming a first member (13) movable together with said lever (5) of the disengaging mechanism between a engaged and said disengaging position corresponding to the engaging and disengaging position of said clutch disengaging mechanism, respectively, thereby defining a path;

a clutch member disengaging means (9) adjacent said lever for acting upon said lever to disengage said clutch member (12) from the line spool thus disengaging the line spool from said transmission means;

cooperable and disengageable locking members (7, 8), at

least one of which is attached to said lever (5), for engaging with one another to lock said disengaging mechanism in its disengaging position;

an engaging mechanism including:

spring means (10) for releasing said locking members from said engagement with one another and returning said disengaging mechanism and said clutch member into engaging position with said line spool, wherein said fishing reel further comprises:

a second member (14), manually movable between a free position and a blocking position, said second member for encroaching upon said path to block the motion of said first member (13) between said engaged and disengaged position of said first member (13) at such a position along said path so as to provide sufficient freedom of motion for said disengaging mechanism to permit the movement of said disengaging mechanism, and thereby said clutch member, from the engaging position to the disengaging position, but insufficient freedom of motion to permit locking members (7, 8) from engaging with one another to lock said disengaging mechanism, and thereby said clutch member, in said disengaging position, said spring means (10) returning said disengaging mechanism from its disengaging position to the engaging position thereof as soon as said activating means (9) is released;

and means, comprising said second member and said activating means, for automatically effecting the reengagement of said clutch member, when said second member is in the blocking position, upon release of said actuating means.

4,564,159

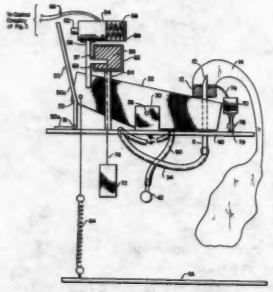
AUTOMATIC BALLOON LAUNCHING SYSTEM

Geoffrey E. Hill, 1789 Country Club Dr., Logan, Utah 84321, and Duard S. Woffinden, Logan, Utah, assignors to Geoffrey E. Hill, Logan, Utah

Continuation-in-part of Ser. No. 446,656, Dec. 3, 1982, Pat. No. 4,494,714. This application Aug. 8, 1983, Ser. No. 521,242

Int. Cl.⁴ B64B *1/58*

U.S. Cl. 244—98 **10 Claims**



1. A system for automatically launching balloons comprising

a balloon station frame,

nozzle means mounted on the frame on which the narrow end of a balloon may be mounted and through which gas may flow into the balloon,

flexible conduit means for supplying gas to the nozzle means,

gas flow control means responsive to an "open" signal for allowing gas to flow through the conduit means, and responsive to a "close" signal for preventing the flow of gas through the conduit means,

release means responsive to "release" signals for separating the balloon from the nozzle means to thereby release the balloon to the atmosphere, said release means including

a rocker arm mounted on the frame to rock between a first position, in which the arm is out of contact with the flexible tubing, and a second position, in which the arm contacts and pinches closed the flexible tubing to prevent the flow of gas to the nozzle means and also contacts the balloon to force it off the nozzle means,

a support member movable between a support position, where the rocker arm is held in the first position by the support member, and a release position where the rocker arm is released from being held, and

biasing means for biasing the rocker arm to the second position upon movement of the support member from the support position to the release position, and

control circuit means for producing the "open", "closed", and "release" signals.

4,564,160

THRUST REVERSER BLOCKER DOOR ASSEMBLY

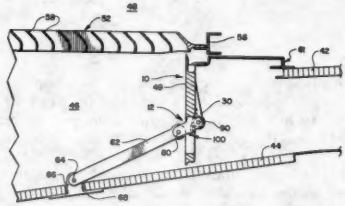
Michael L. Vermilye, Redmond, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US82/01355, § 371 Date Sep. 29, 1982, § 102(e) Date Sep. 29, 1982, PCT Pub. No. WO84/01344, PCT Pub. Date Apr. 12, 1984

PCT Filed Sep. 29, 1982, Ser. No. 459,903

Int. Cl.⁴ F02K *3/06*

U.S. Cl. 244—110 B **3 Claims**



1. A thrust reverser blocker door assembly for a fanjet engine wherein a plurality of blocker doors are disposed aerodynamically about a peripheral circumferential zone of a central fan duct of the engine in a cruise configuration and are pivoted radially inward into an annular ring interrupting said fan duct in a thrust reversing configuration for diverting air radially outward and forward through a cencentric bypass duct, each of said blocker doors being secured for pivotal displacement by an articulated linkage comprising a drag link disposed for arcuate motion about a fixed pivot point at its proximal end, an overcenter link pivotally spanning said blocker door and the distal end of said drag link at a longitudinally translatable pivot point, and biasing means for tensioning said articulated linkage and biasing said blocker door radially outward about said translatable pivot point when in said cruise configuration, said blocker door being comprised of a panel having a slot formed therein, said overcenter link being disposed within said slot about axle means generally normal to the action of said articulated linkage, said biasing means being a spring means bridging said panel and said overcenter link, said overcenter link being a generally "H"-shaped link having a first throat receiving said drag link and a second throat receiving boss means on said blocker door, said spring means being a torsion spring means enveloping said axle means on either side of said second throat and bridging said overcenter link in torsional engagement therewith.

4,564,161

HELICOPTER RESCUE BASKET

Sally Z. Frye, 1422 E. Blackburn Rd., Mount Vernon, Wash. 98273

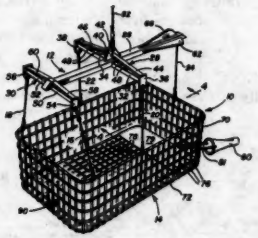
Filed Dec. 30, 1983, Ser. No. 567,167

Int. Cl.⁴ B63C *9/26*

U.S. Cl. 244—137 P **15 Claims**

1. Apparatus for suspension from a helicopter and the like

for use in rescue and recovery operations, the apparatus comprising a suspension frme, means for attaching the frame to a helicopter winch cable and the like, means for suspending a basket-like container from the frame, and fin means or the frame for stabilizing the apparatus when airborne, wherein the suspension frame includes an elongate frame member, and a



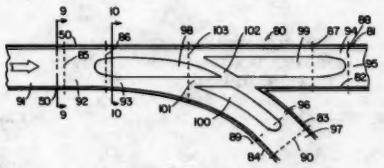
cross bar, the means suspending the container comprises cables connected at opposite ends of the elongate member and cross bar, the means for attaching the frame to a helicopter winch cable or the like is located substantially centrally of the elongate member, and the fin means is located at one end of the elongate member.

4,564,162

TRACK INTERSECTION FOR TOY TRAINS

Thomas H. Grimm, Manhattan Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 6, 1984, Ser. No. 568,663
Int. Cl.⁴ E01B *7/00*
U.S. Cl. 246—432 **2 Claims**



1. For use in combination with a toy railroad vehicle having a plurality of wheel pairs wherein each wheel defines an inner rolling surface and an outer rolling surface having a diameter reduced from said inner rolling surface, said outer rolling surfaces of said wheels within each wheel pair being spaced by a predetermined distance, a track intersection comprising:

a track intersection region having a first pair of rails spaced apart by said predetermined distance and dividing into a second and third pair of similarly spaced rails;

a raised roadbed section extending between said first, second and third pairs of rails throughout said track intersection region, and having a height with respect to said rails such that said wheels roll upon said inner rolling surfaces, said raised roadbed section including first, second, and third downwardly sloping ramp portions;

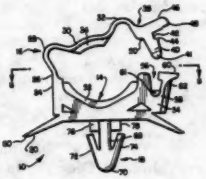
a lowered roadbed portion having a height with respect to said rails such that said wheels roll upon said outer rolling surfaces, beginning at each of said ramp portions between said first, second, and third pairs of rails, and extending away from said track intersection region; and first, second, and third islands located between said first, second, and third pairs of rails within said track intersection region; said first, second, and third islands being mutually spaced apart to permit said wheels to roll upon said rolling surfaces from said first pair of rails to either said second or third pair of rails.

4,564,163

RETAINING CLIP

Barry R. M. Barnett, Aylesbury, Great Britain, assignor to TRW United-Carr Limited, Aylesbury, Great Britain

Filed Jun. 4, 1984, Ser. No. 616,525
Int. Cl.⁴ B65D *67/02*
U.S. Cl. 248—71 **12 Claims**



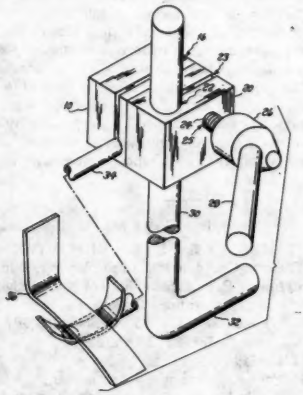
1. A clip for attaching an elongate element having a series of lands and risers circumferentially disposed on its surface to a support comprising a body portion provided with a fastening member adapted to attach the clip to the support, the body portion including means defining a seat for the elongate element and having a flexible arm extending from one side thereof, a free end of the arm being engageable in the other side of the body portion to hold the elongate element in the seat, the body portion comprising at least one fin configured to engage said lands on the elongate element to resist longitudinal sliding of the element in the clip.

4,564,164

ADJUSTABLE SUPPORT SYSTEM

R. Daniel Allen, 14429 Bass Lake Rd., P.O. Box 189, Newbury, Ohio 44065, and Howard F. Fink, 2313 19th Ave. West, Bradenton, Fla. 33505

Filed Jun. 8, 1984, Ser. No. 618,817
Int. Cl.⁴ B68G *5/00*
U.S. Cl. 248—118 **7 Claims**



1. An adjustable support system comprising:

a first block having a cylindrical passage therethrough and a slot extending from one side of said first block to said cylindrical passage;

said first block also having a hole drilled at right angles to said cylindrical passage and through said slot;

the portion of said hole beyond said slot having threads therein;

a first rod sized to be contained in the cylindrical passage of said first block;

a second block having a cylindrical passage therethrough and a slot extending from one side of said second block to said cylindrical passage;

said second block also having a hole drilled at right angles to said cylindrical passage and through said slot;

the hole in said second block extending completely through said second block;

a second rod sized to be contained in the cylindrical passage of said second block; and

a compression head having a threaded member extending therefrom long enough to pass through the hole in said second block and through the hole in said first block to mate with the threads in said first block.

4,564,165

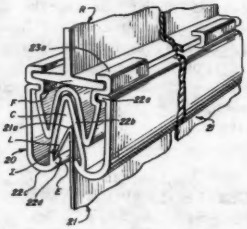
ATTACHING DEVICE

Edward L. Grant, Jackson County, Mo.; Earl E. Stops, and Edward Saltz, both of Waukesha County, Wis., assignors to Hallmark Cards, Inc., Kansas City, Mo.

Filed Mar. 31, 1983, Ser. No. 480,718

Int. Cl.[4] B42F *13/00*

U.S. Cl. 248—343 **5 Claims**



1. The combination of a plurality of elongated ceiling supports, each having an exposed surface portion, an elongated device for attaching a depending unit to the exposed surface portion of a selected ceiling support, and means for magnetically securing a surface portion of said device to the exposed surface portion of said selected ceiling support, at least one of the surface portions being of ferrous metal; said device being provided with an elongated interior cavity accessible at least through an elongated, narrow opening formed in the exterior of said device, said cavity being provided with an internal ledge, said ledge being adapted to be engaged by a peripheral segment of the depending unit wherein the peripheral segment is retained within the cavity and is impassable relative to the elongated opening.

4,564,166

ROTARY TILT BASE FOR VIDEO TERMINAL

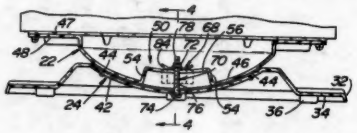
Charles E. Craft, Croydon, Pa.; Lester Winter, Willingboro, and Robert Hawley Pote, Pitman, both of N.J., assignors to Delta Data Systems Corporation, Trevose, Pa.

Filed Jan. 21, 1983, Ser. No. 459,907

Int. Cl.[4] F16M *13/00*

U.S. Cl. 248—349 **7 Claims**

1. A base for supporting a video terminal on a supporting surface, with said base having front and back portions and said terminal having a display screen which is situtated adjacent said front portion when said terminal is resting on said base, said base comprising an upper member, a lower member and connecting means, wherein said lower member has a downwardly concave section, said upper member has a correspondingly shaped downwardly convex section which is slidably situated generally within said concave section of said lower member, said lower member rests generally adjacent said external supporting surface and said upper member is situated generally adjacent and beneath said video terminal, and said connecting means includes slotted guide means and fastening means which together serve to connect said lower member to said upper member in a manner permitting pivotable movement of said upper member about a predetermined tilt axis which is parallel to said supporting surface and unlimited rotational movement about a rotational axis which is perpendicular to and rotatable about said tilt axis through a predetermined arc, wherein said guide means is an upwardly extending projection located on and secured to the top surface of the downwardly convex section of said upper member, said pro-



jection having a pair of generally parallel side surfaces and a top surface which includes an elongated slot with the direction of said slot establishing the direction of said tilt axis and the length of said slot generally establishing said predetermined arc, and wherein said fastening means includes a fastening member and a generally U-shaped bracket having an apertured base section and a pair of downwardly extending legs, said base section being disposed over and adjacent said top surface of said guide means and said legs being located adjacent respective side surfaces of said guide means, with said bracket serving to insure that said fastening member is centered within said slot irrespective of its longitudinal position within said slot, the angle of tilt of said base being established by longitudinally positioning a portion of said fastening means within said slot.

4,564,167

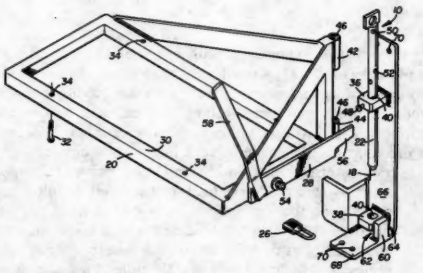
TOOL BOX MOUNTING ASSEMBLY

James H. Smith, P.O. Box 144, Glenn, Calif. 95943

Filed Oct. 31, 1983, Ser. No. 547,205

Int. Cl.[4] F16M *13/00*

U.S. Cl. 248—552 **9 Claims**



1. An assembly for mounting a container on a structural element, comprising

a bracket adapted for attachment to the structural element, said bracket having a vertical plate portion and a horizontal plate portion,

a frame mounted for pivotable movement on said bracket, said frame including means for supporting the container,

pin means for securing said pivotable frame on said bracket, said pin means being removable from said bracket for releasing said frame and container from said bracket,

locater means arranged for interaction between said frame

and bracket for selectively fixing the pivotable frame in at least one position relative to said bracket,

a projection on said vertical plate portion, and

a locking projection on said horizontal plate portion,

wherein said locater means comprises lever means movable into engagement with a first receiving slot between said projection and said locking projection for selectively fixing said frame in said one position and movable into engagement with a second receiving slot between said locking projection and said vertical plate portion for selectively fixing said frame in a second position relative to said bracket.

4,564,168

UPPER SUPPORT FOR A RADIATOR

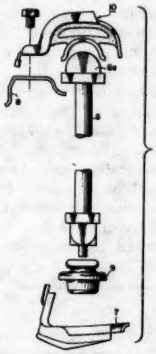
Yasuhiro Ikuta, Okazaki, and Toshihiro Takami, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 11, 1984, Ser. No. 629,896

Claims priority, application Japan, Jul. 26, 1983, 58-135070

Int. Cl.⁴ F16M *1/02*; B60K *11/04*

U.S. Cl. 248—638 **8 Claims**



1. An upper support for a radiator comprising:

a body bracket adapted to be fitted to a car body;

a radiator bracket spaced from the body bracket and adapted to be in pressure-contact with the top of the radiator, the upper support having a bracket axis that intersects the body bracket and the radiator bracket; and

a rubber member connecting the radiator bracket to the body bracket and having at least one rubber prop on one side of the bracket axis and at least one rubber prop on a side of the bracket axis opposite to said one side, with a bore-like cavity defined between the rubber props on the one side and the opposite side, respectively, of the bracket axis, said rubber props being inclined upwardly from the body bracket toward the radiator bracket when the support is oriented with the bracket axis vertical and the radiator bracket below the body bracket.

4,564,169

FLUID ACTUATOR FOR STEPWISE REGULATION OF VALVES

Sven Nordlund, Vällingby, Sweden, assignor to WM Regler AB, Vällingby, Sweden

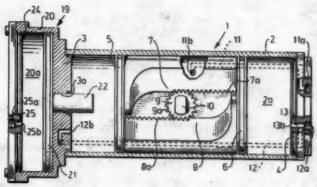
PCT No. PCT/SE84/00048, § 371 Date Sep. 19, 1984, § 102(e) Date Sep. 19, 1984, PCT Pub. No. WO84/03128, PCT Pub. Date Aug. 16, 1984

PCT Filed Feb. 10, 1984, Ser. No. 653,269

Claims priority, application Sweden, Feb. 11, 1983, 8300756

Int. Cl.⁴ F16K *31/163*

U.S. Cl. 251—58 **1 Claim**



1. A fluid actuator for the stepwise regulation of a ball valve, cock valve or the like between at least three different and distinct rotational positions, such as 0°, 90° and 180°, said fluid actuator comprising a cylinder (2) having two end walls (3,4), two pistons (5, 6) disposed in the cylinder for movement towards and away from one another, each of said pistons having an axial gear rack (7, 8) with teeth (7*a*, 8*a*) in mesh with a toothed wheel (9) mounted on an actuating member (10) rotatably journalled in and passing sealingly through at least one cylinder wall to extend transversely to the direction of movement of said pistons, and at least three fluid supply and discharge passages (11, 12, 13), a first one of said passages (11) opening out between the pistons, a second one of said passages (12) opening out in one of said end walls (3) of the cylinder opposite a first one of said pistons (5), and a third one of said passages (13) opening out in another of said end walls (4) opposite a second one of said pistons (6), characterized by: a further cylinder chamber (20*a*) defined axially outwardly of said one end wall, a third piston (21) disposed in said further cylinder chamber for movement towards and away from said one end wall, a bore (3*a*) in said one end wall, and a piston rod (22) coupled to said third piston and extending through said bore for movement into and out of a cylinder chamber defined between said one end wall and said first piston, the cross-sectional area of the third piston exceeding the sum of the cross-sectional areas of the first and the second pistons, and the length of stroke of the piston rod of the third piston corresponding to one-half the length of stroke of the first and second pistons, whereby the full extension of the piston rod into said a cylinder chamber establishes a limit stop restricting the movement of the first and second pistons to one-half of their stroke length, and the respective cross-sectional areas of the pistons prevents such limit stop from being overridden.

4,564,170

VALVE CLOSURE MEANS

William P. Gaines, 1953 Riviera Dr., Vista, Calif. 92083

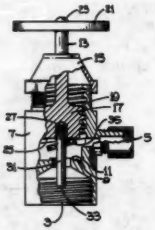
Filed Feb. 27, 1984, Ser. No. 583,822

Int. Cl.⁴ F16K *1/46, 1/48*

U.S. Cl. 251—88 **1 Claim**

1. In a valve comprising communicating inlet and outlet ports, an annular valve seat therebetween and a valve body including a valve face adapted for reciprocating movement against said seat, closure means comprising an elongated headless valve stem, fixedly anchored for nonrotary motion in said valve body and of a constant diameter throughout and having a portion thereof extending from said valve face and directed through said seat and terminating between said seat and said inlet port when said valve is fully opened and a resilient washer

annularly received on said stem, between said face and said seat, having a central opening larger than said stem to permit free turning thereon and free movement along the length thereof when the valve is opened, and having an outside diameter larger than said seat to permit full closure between said



face and said seat when the valve is closed including means on the ends of said valve stem for attaching it to said valve face wherein said means include threads on one end of said stem for receipt in a threaded hole formed in said valve face and a slot formed in the other end thereof for receipt therein of a screwdriver blade.

4,564,171

FLOW REGULATOR FOR SETTING AND MAINTAINING A CONSTANT FLOW OF BLOOD, BLOOD-SUBSTITUTE, OR SIMILAR LIQUID

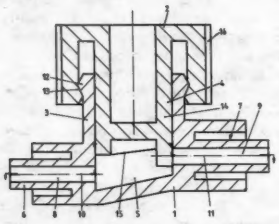
Walter C. Heinzerling, Malsfeld Beiseförth, Fed. Rep. of Germany, assignor to Infusionstechnik Clinico GmbH & Co., Bad Hersfeld, Fed. Rep. of Germany

Continuation of Ser. No. 542,366, Oct. 17, 1983, abandoned. This application Apr. 8, 1985, Ser. No. 720,060

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1983, 8311508[U]

Int. Cl.[4] F16K *5/04*

U.S. Cl. 251—209 **7 Claims**



1. Flow regulator for setting and maintaining a constant flow of blood-substitute, or similar liquid, comprising: a main member having a bore; a movable part mounted on said main member and serving as a closure element; a valve chamber forming said bore and having two connections communicating substantially perpendicular to an axis of said bore and having ducts for a flow line; said connections having axes displaced relative to each other in said chamber so that the closure element in said valve chamber can move only in the vicinity of one duct from a complete open position to a completely closed position; said flow line being fully blocked in said closed position, flow through said movable part being free of flow resistance when in said open position, said ducts being displaced relative to each other so that said movable part leaves said ducts fully uncovered when in said open position for unthrottled flow though the flow regulator, said ducts having substantially parallel axes, a passage surface being present for blood flow when said flow regulator is substantially half closed, said surface comprising substantially a sector of a circular surface having a length and width substantially equally large, one of said ducts forming also a valve seat; an extension projecting into said bore, said main member being formed of a substantially 360° incline on said extension, said incline having a circular shape dependent on a position of free passage cross-section of said duct and substantially blocking off said duct at partial settings of said flow regulator, blood through said flow regulator having minimum deflections and minimum change in direction of flow.

4,564,172

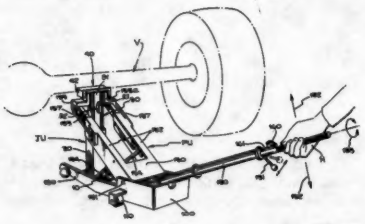
METHOD OF USING A HYDRAULIC POWER UNIT TO CONTROL A MECHANICAL JACK

Harry H. Arzouman, Los Angeles, Calif., assignor to Safe-T-Jack, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 261,686, May 7, 1981, Pat. No. 4,462,569. This application Jun. 18, 1984, Ser. No. 621,268

Int. Cl.[4] B66F *5/04*

U.S. Cl. 254—1 **5 Claims**



1. A method of jacking up and supporting a vehicle or structure, comprising the steps of:

selecting a plurality of jack stand units, each being capable of being vertically telescoped to an initial condition, of being vertically extended for raising a load, and of being locked in its vertically extended position;

selecting a machine that is capable of positioning and controlling a jack stand unit;

operating the machine so as to position the plurality of jack stand units, in their initial conditions, in corresponding fixed locations underneath the vehicle or structure;

operating the machine to control the units, one at a time, so that each unit is vertically extended and then locked, so as to raise and support the vehicle or structure; and

when it is desired to lower the vehicle or structure, operating the machine to control the units, one at a time, so that each unit is unlocked and then telescoped to its initial condition.

4,564,173

TREE PUSH

Peter W. Atherton, and George Spector, both of 233 Broadway, Rm. 3615, New York City, N.Y. 10007

Filed Mar. 19, 1984, Ser. No. 591,195

Int. Cl.[4] B66F *3/24*

U.S. Cl. 254—133 R **1 Claim**

1. In combination with a bumper jack having a jack post, a

jack mechanism and a jack handle, an apparatus for pushing a tree over when the tree is being cut down comprises:

(a) a base member having a notched out bottom to prevent the base member from sliding on the ground surface, the base member mounted to the bottom of the jack post;

(b) a support member having an aperture mounted to the jack mechanism;

(c) a guide member having an aperture mounted to the top side of the jack post;

(d) an elongated shaft slidably placed through the aperture in the guide member with the bottom end of the shaft affixed into the aperture in the support member whereby the shaft is parallel with the jack post; and

(e) a tip member having a plurality of points on top, the tip member affixed onto the top end of the shaft so that when the apparatus is tipped at an angle between the round surface and the tree the jack handle will operate the jack mechanism to rise along the jack post causing the support member to push the shaft through the aperture in the guide member until the points on the tip member will contact the tree, pushing the tree over when the tree is being cut down, wherein the guide member in the apparatus further comprises:

(f) a cylinder having an aperture therethrough;

(g) a first diagonal vertical plate having an elongated slot therethrough affixed perpendicular to the side of the cylinder;

(h) a second diagonal vertical plate having an elongated slot therethrough;

(i) a plate affixed perpendicular to end of the second plate;

(j) at least one bolt that slideably fits into the elongated slots in the first and second plates; and

(k) at least one nut that is tightened on the bolt so that the first and second plates can be adjusted to maintain a uniform distance between the jack post and the shaft.

4,564,174

DEVICE FOR THE RECOVERY OF MERCURY

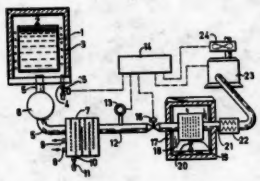
Ake Sikander; Ake Björkman, and Günther Jönsson, all of Karlskrona, Sweden, assignors to Lumalampan Aktiebolag, Karlskrona, Sweden

Division of Ser. No. 442,767, Nov. 18, 1982, Pat. No. 4,468,011. This application Jun. 11, 1984, Ser. No. 618,927

Claims priority, application Sweden, Dec. 1, 1981, 8107177

Int. Cl.[4] C22B *9/04*

U.S. Cl. 266—149 **15 Claims**



1. Apparatus for recovering mercury from waste containing plastic material by distilling the mercury from the waste, comprising:

a treatment chamber (2) for receiving the waste;

inlet means (4) for supplying inert gas into said treatment chamber, said inlet means including a controllable inlet valve (15) for regulating the inert gas supplied to said treatment chamber (2);

means in said treatment chamber for first heating the waste to about 200° C. in a slight vacuum and with a limited supply of said inert gas, and for subsequently heating the waste to temperatures higher than 200° C.;

a discharge line (5, 12) coupled to said treatment chamber (2) for discharging gases emitted by the heated waste material in said treatment chamber, said discharged gases containing organic decomposed products;

an afterburner chamber (6) coupled in said discharge line (5, 12) for combusting said discharged gases from said treatment chamber;

cold trap means (7, 18) coupled in said discharge line (5, 12) downstream of said afterburner chamber (6) for receiving gases exhausted from said afterburner chamber (6);

a selectively operable vacuum pump (23) coupled to said discharge line (5, 12) downstream of said cold trap means (7, 18) for drawing said gases from said treatment chamber through said afterburner chamber (6) and through said cold trap means (7, 18);

shut-off valve means (16) in said discharge line (5, 12) upstream of said vacuum pump (23) for selectively opening and closing said discharge line (5, 12);

control means (14) coupled to said vacuum pump (23), to said inlet valve (15), and to said shut-off valve means (16) for selectively opening and closing said shut-off valve means (16) and said inlet valve, and for selectively controlling operation of said vacuum pump (23).

4,564,175

MOLTEN METAL TRANSFER CRUCIBLE WITH EXTERNAL FILTER

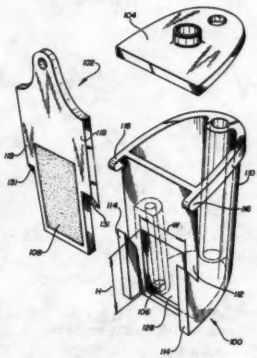
Daniel E. Groteke, Cincinnati, Ohio, and Avery L. Kearney, Valparaiso, Ind., assignors to Metcast Associates, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 398,406, Jul. 14, 1982, Pat. No. 4,444,377. This application Apr. 20, 1984, Ser. No. 602,508

The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.

Int. Cl.[4] C21C *7/04*

U.S. Cl. 266—227 **9 Claims**



1. A transfer crucible for containing molten metal, having a cavity, an inlet at a first position, and an outlet at a second position, the improvement comprising:

a removable blade bound by a first side edge, a second side edge and a bottom edge, having a first surface and a second surface spaced apart with a passage therebetween;

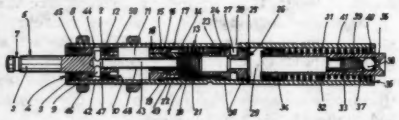
a filter element positioned in said passage; and

means for positioning and affixing said blade with respect to said inlet such that said removable blade is external to the crucible cavity and said filter element interrupts the flow of metal through said inlet.

4,564,176
HYDRAULIC DASHPOT

Rainer Schnetz, Munich, Fed. Rep. of Germany, assignor to Firma Albert Schnetz, Fed. Rep. of Germany

Filed Jan. 25, 1984, Ser. No. 573,608
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1983, 3302790
Int. Cl.[4] F16F *9/34*
U.S. Cl. 267—64.11 20 Claims

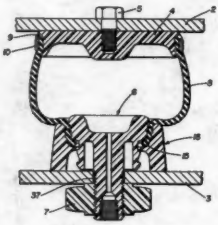


1. A shock damping hydraulic apparatus comprising a cylinder, a piston placed in said cylinder and sealingly fitting therein for axial motion therealong, a piston rod for moving said piston axially along in said cylinder when acted upon by an external force to be damped, cylinder space dividing means in said cylinder, said dividing means and said piston walling off a high pressure liquid space between them in said clinder, means walling off a low pressure space in said cylinder, a spring loaded spill valve for forming a hydraulic connection between said high pressure space and said low pressure space, return means for producing return motion of said piston and said piston rod thereof outwards in relation to said cylinder, a check valve for letting liquid off from said low pressure space into said high pressure space when such return motion is taking place, said spill valve having a pressure-dependent function and being positioned stationarily inside said cylinder.

4,564,177
CLAMP FOR NON-BEADED PNEUMATIC ASSEMBLIES

Daniel J. Leonard, Oaklandon, Ind., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 21, 1983, Ser. No. 487,327
Int. Cl.[4] F16F *9/54*
U.S. Cl. 267—64.24 7 Claims



1. An apparatus for clamping a non-beaded end of an airspring bellows to a piston means comprising:

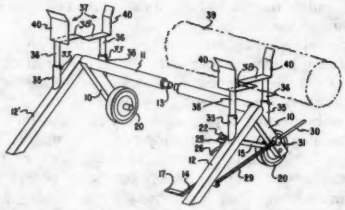
(a) piston means having a generally annular opening adapted to receive said end of said airspring bellows therein, wherein said generally annular opening has associated therewith an inwardly extending ramp;

(b) clamp means having a first end and a second end, said second end having a frustrum shaped portion adapted to coact with said annular opening and said inwardly extending ramp of said piston means in order to retain said non-beaded end of said airspring bellows between said piston means and said clamp means wherein said clamp means includes barb means adapted to coact with said ramp in order to cause said non-beaded end of said airspring bellows to be retained between said piston means and said clamp means.

4,564,178
LOG HOLDER

Harlan E. Steffe, Rural Rte., Moville, Iowa 51039

Filed Jun. 25, 1984, Ser. No. 624,124
Int. Cl.[4] B23Q *3/00*
U.S. Cl. 269—17 8 Claims

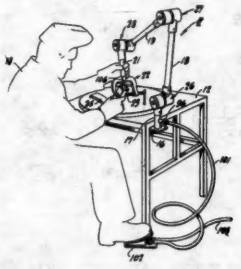


1. Log supporting device comprising a back group of legs fixedly joined together, a front group of legs fixedly joined together, said front group being pivotally joined to said back group, each leg of said front group being opposed by a corresponding leg of said back group to form a set, each set thereby comprising one back leg and one front leg, said front legs being pivotally tiltable relative to said back legs, log support means on at least two of said sets of legs, said support means being thereby tilted toward each other as said legs are pivotally separated.

4,564,179
ARTICULATED SUPPORT ARM APPARATUS

Ashley J. Hollingsworth, 48 Manzanita Rd., Atherton, Calif. 94025

Filed Apr. 12, 1984, Ser. No. 599,493
Int. Cl.[4] B23Q *1/04*
U.S. Cl. 269—71 27 Claims



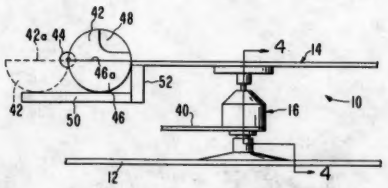
1. In an articulated support arm apparatus for use by an operator, a base, first, second and third arms supported by said base, a work device supported by said arms, a dual axis joint interconnecting said first and second arms, an additional dual axis joint interconnecting said second and third arms, said joints being movable between locked and unlocked positions and control means for moving said joints to said locked and unlocked positions substantially simultaneously whereby in the unlocked positions said work device can be moved by the operator to a desired position and in locked positions the work device is held in a predetermined position.

4,564,180

HAND HOLDING APPARATUS FOR HAND SURGERY

John M. Agee, 3980 Bartley Dr., Sacramento, Calif. 95822, and Francis C. King, Shingle Springs, Calif., assignors to John M. Agee, Sacramento, Calif.

Filed Nov. 15, 1983, Ser. No. 552,185
Int. Cl.[4] A61G *13/00*
U.S. Cl. 269—75 10 Claims



1. Apparatus for holding and supporting a patient's hand for surgery comprising:

a support adapted to be placed on a surface;

a plate above the support;

means pivotally mounting the plate on the support in any one of a number of operative positions with respect thereto, said pivot means having means for releasably holding the plate in a fixed operative position;

a first device secured to and extending laterally from one end edge of the plate, said first device having an outer end edge; and

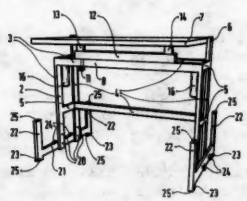
a second device hingedly coupled to the outer end edge of the first device and movable from a first position extending outwardly from the first device to a second position overlying the first device, the devices having flat surfaces substantially flush with and aligned with the upper surface of the plate when the second device is in its first position, said devices providing additional upper surface area for the plate when the second device is in said first position to allow exposure of the palmar surface of a patient's hand, said second device having means for supporting the fingers of a patient's hand in a curved condition when the second device is in said second position to allow exposure of the dorsal surface of the patient's hand.

4,564,181

BENCH

Eduard Gansel, Dettenhausen; Günter Schaal, Stuttgart; Helmut Schneider, Leinfelden-Echterdingen; Heribert Schramm, Stuttgart; Eberhard Seidel, Ostfildern, and Günter Zilly, Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 14, 1983, Ser. No. 513,990
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1982, 3233586
Int. Cl.[4] B25B *1/00*
U.S. Cl. 269—88 5 Claims



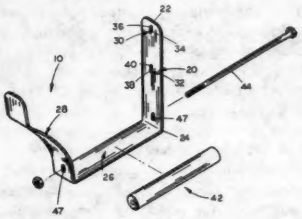
1. A bench comprising a rigid carrier frame having an upper portion; a work board having two opposite edge portions; pivoting means for pivoting said work board relative to said frame and including two pivot pins each interconnected between said upper portion of the frame and a respective edge portion of the work board; and supporting means including a supporting arm pivotable about a vertical axis in a horizontal plane under said work board and supporting said work board, said work board being pivotable about a pivot axis on said pivot pins relative to said frame from a first operating horizontal position, in which the work board is disposed immediately above said frame, to a second operating and also horizontal position, in which the work board projects outwardly away from said frame, said supporting arm being movably supported and adjustable relative to said frame so as to support said work board in said first and second horizontal position, said supporting means further including two support blocks connected to said arm and spaced from each other on said arm, said work board having an underside which lies on at least one of said support blocks when the work board is in said first position, said arm having one end at which a pivot for pivoting said arm is located and another free end, one of said two support blocks being positioned near said one end and another of said two support blocks being positioned near said free end of the arm, said frame being provided with a plurality of bearing openings formed in said upper portion of the frame, said openings being distributed along said upper portion and adapted to selectively receive said pivot for pivoting said arm in said horizontal plane, said openings being remote from the pivot axis of said work board.

4,564,182

TEMPORARY SUPPORT FOR GUTTERS

Donald E. Svajgl, 4205 Polk St., Omaha, Nebr. 68107

Continuation-in-part of Ser. No. 491,595, May 4, 1983, abandoned. This application Feb. 11, 1985, Ser. No. 700,047
Int. Cl.[4] B23Q *3/02*
U.S. Cl. 269—102 3 Claims



1. An apparatus for temporarily supporting an elongated room gutter during the installation thereof, comprising,

a substantially vertically disposed inner frame member adapted to be secured to the fascia board extending downwardly from the edge of the roof of the house upon which the gutter is to be installed,

a horizontally extending bottom frame member extending outwardly from the lower end of said vertically disposed frame member,

an outer frame member extending upwardly from the outer end of said bottom frame member, said inner frame member including at least one opening closed at the top and including an enlarged portion and an elongated slot portion extending upwardly therefrom whereby, upon suspending said inner frame member on a nail extended through said slot, said opening provides clearance for upward movement of the inner frame member relative to the nail,

and vertically yieldable support means positioned between said outer frame member and said inner frame member for supporting the bottom of the gutter thereon while the gutter is being installed,

said vertically yieldable support means permitting said inner

frame member, bottom frame member and outer frame member to be moved upwardly relative to the fascia board during the removal of the apparatus therefrom after the gutter has been installed.

4,564,183

FOLDING APPARATUS FOR A WEB-FED ROTARY PRINTING MACHINE

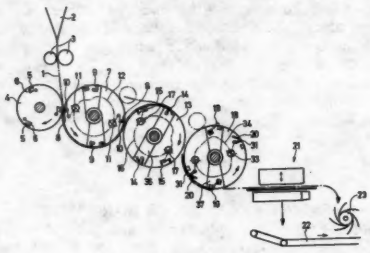
Hans Müller, Leimen, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Feb. 7, 1985, Ser. No. 699,032

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1984, 3404170

Int. Cl.[4] B41F *13/56*

U.S. Cl. 270—21.1 5 Claims



1. Folding apparatus for a web-fed rotary printing machine having a train of successive cylinders including a slot-type collecting cylinder, a blade cylinder with two cutting blades disposed on the periphery thereof for cutting full format lengths off a web and with cam-controlled folding blades offset 90° from the cutting blades, a folding-jaw cylinder with two controlled folding jaws disposed at the periphery thereof and a cam-controlled folding blade offset by 45° downstream from the folding jaws, and a second cross-folding cylinder having two gripper rows cooperating with the folding jaws of the folding-jaw cylinder and having two controlled folding jaws offset downstream from the gripper rows and cooperating with the folding blades of the folding jaw cylinder, comprising three needle rows for collecting being disposed with equal mutual spacing around the periphery of the slot-type collecting cylinder, the periphery of the collecting cylinder being able to accept three half format lengths of the web; two additional removable cutting blades located on the blade cylinder at an offset of 90° from the cutting blades already fixed thereon and being disposed together with the folding blades of the blade cylinder on a common support pivotable into a respective working position, the folding-jaw cylinder carrying controllable folding-blade spindles selectively with respective mutually opposing folding blades on a leading side thereof and removable needle rows on a trailing side thereof, the folding-jaw cylinder and a control cam carried thereby being pivotable into working position in accordance with the folded product to be produced; and the second cross-folding cylinder carrying two controlled folding-jaw spindles for selectively carrying a gripper row and a folding-jaw half, depending upon the folded product to be produced whereby, selectively, by turning the body of the second cross-folding cylinder and a control cam mounted thereon, a respective folding jaw is bringable into operative connection with a respective folding blade of the folding-jaw cylinder, and said gripper row of the second cross-folding cylinder is bringable into operative connection with a respective needle row of the folding-jaw cylinder.

4,564,184

PASTING STATION FOR A FAST PRINTER

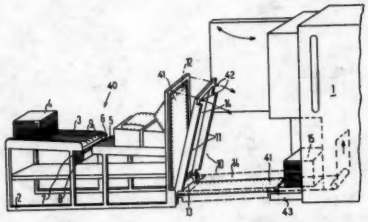
Peter Rumpel, Feldkirchen-Westerham, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 16, 1984, Ser. No. 631,079

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1983, 3328255

Int. Cl.[4] B41L *1/32*

U.S. Cl. 270—39 16 Claims



1. In an apparatus with joining means for connecting individual respective bottom and top sheets of successive fanfolded stacks of prefolded continuous form paper at a seam to provide a continuous web to feed to a fast printer, the improvements comprising a longitudinally extending transfer plane comprising a work region which is adjacent the printer and a supply region spaced from the work region by means for forming a turning gap extending transverse to the longitudinal direction of the transfer plane, said means for forming a turning gap receiving a leading edge of a bottom sheet of a fanfolded stack as the stack is moved on said transfer plane in the longitudinal direction from the supply region to the work region and directing said leading edge to said joining means and thereby exposing said bottom sheet for connection by said joining means at said seam to a top sheet of the next following stack.

4,564,185

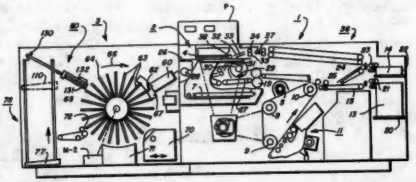
COPYING APPARATUS WITH FINISHER HAVING STAPLER AND ADHESIVE BINDER STATIONS

Thomas J. Hamlin, and William B. Edwards, both of Macedon, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1984, Ser. No. 684,814

Int. Cl.[4] B42B *2/00*

U.S. Cl. 270—53 10 Claims



1. A finishing apparatus adapted to receive series of multiple sheets of like information, to collate the same into sets and to bind completed sets comprising:

a rotary sorter having radially extending bins arranged in the path of the stream of sheets to receive the stream of sheets in succession at a loading station and to collate the same into booklets,

means for imparting rotation to said sorter relative to said loading station whereat a sheet is received in each of said bins,

a first binding station adjacent said sorter, said first binding station having an adhesive binding device which when

activated being arranged to apply adhesive material to the spline of the booklets for binding the same,

a second binding station adjacent said sorter, said second binding station having a stapler device which when activated being arranged to apply a staple to each of the booklets, and

means for activating each of said binding stations selectively for producing either adhesive bound booklets, or stapled booklets.

4,564,186

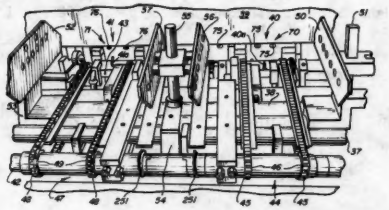
APPARATUS FOR GATHERING PRINTED SIGNATURES FOR SADDLE STITCHING

Frederick G. E. Clarke, Jr., Essex, Conn.; Anthony R. King, Bourbon, and Anthony Majewski, Warsaw, both of Ind., assignors to R. R. Donnelley & Sons Company, Chicago, Ill.

Filed Jun. 4, 1984, Ser. No. 617,904

Int. Cl.⁴ B65H *39/02*

U.S. Cl. 270—54 **10 Claims**



1. In a saddle type gathering machine having a lugged gathering conveyor chain for delivering unbound books consisting of gathered signatures to a saddle stitcher, in combination:

a supporting frame having parallel side beams which are in planes normal to the line of the chain, and structural members connecting said side beams;

first and second signature supply box means positioned side-by-side between and supported by said side beams, both said supply box means having forward ends toward the gathering conveyor chain;

signature transfer means including a plurality of parallel shafts mounted in said side beams between the first and second signature supply box means and the gathering conveyor chain and extending across the forward ends of both said supply box means, first signature transfer drum means carried on said plurality of shafts in operative association with said first signature supply box means, second signature transfer drum means carried on said plurality of shafts in operative association with said second signature supply box means, a first set of suction grippers for moving signatures seriatim from the first signature supply box means to the first transfer drum means, and a second set of suction grippers independent of said first set for moving signatures seriatim from said second signature supply box means to said second transfer drum means;

means for driving said plurality of shafts and said gathering conveyor chain in timed relationship with one another to deliver signatures from both transfer drum means to the gathering conveyor chain; and

means for operating each of said first and second sets of suction grippers independently of the other set to selectively move signatures from the respective associated signature supply box means to the respective associated transfer drum means for delivery to the gathering conveyor chain.

4,564,187

SHEET FEED DEVICE FOR A PRINTER OR TYPEWRITER

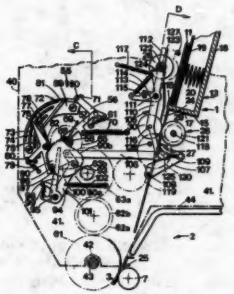
Jorge Costa, and Wolfgang Reichel, both of Yverdon, Switzerland, assignors to Hermes Precisa International S.A., Yverdon, Switzerland

Filed Jun. 1, 1984, Ser. No. 616,149

Claims priority, application Switzerland, Jun. 3, 1983, 3056/83

Int. Cl.⁴ B65H *1/28, 5/26*

U.S. Cl. 271—9 **9 Claims**



1. Sheet feed device for a printer or typewriter comprising a frame, two or more supports on which the sheets to be printed are stored in a stack, a removal mechanism associated with each of the supports intended to remove a sheet from the support for its introduction into the printer, and a selection mechanism intended to activate one of the removal mechanisms, the selection mechanism and the removal mechanisms being driven by a drive element in two opposite directions, characterized in that the selection mechanism comprises a selection lever driven by the drive element and a guide part working with a portion of the selection lever, this guide part comprising a selection slide working with said portion and a number of guide tracks for this portion at least equal to the number of removal mechanisms, the device comprising, associated with each of the guide tracks, a removal control part made to work with the selection lever, each of the guide tracks comprising an opening through which it communicates with the selection slide, the selection lever being pulled by an elastic element to a rest position from which is carried in one direction along the selection guide to said openings, which are made so that said portion follows one of the guide tracks, when the selection lever is moved in a second direction opposite the first to work with one of the removal control parts.

4,564,188

SINGLE SHEET FEEDING MECHANISM

John R. McNair, Scarsdale, N.Y., assignor to Westvaco Corporation, New York, N.Y.

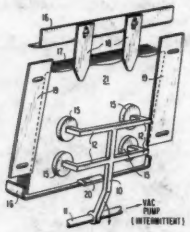
Filed Nov. 13, 1984, Ser. No. 671,009

Int. Cl.⁴ B65H *3/08*

U.S. Cl. 271—103 **1 Claim**

1. A suction head for a paper sheet feeder mechanism comprising rigid piping means secured to articulated arm means, axial aperture means through said piping means in fluid communication with vacuum pumping means for drawing atmospheric air through said aperture means comprising internally, threaded bore means disposed at the distal end of said piping means, rigid sealing face means terminating said piping means around said bore means, T-nut means having a flared compression surface of one end of an externally threaded shank for turning into said threaded bore means, rigid cup means having a cylindrical wall terminated at one axial end by a transverse bottom wall, said bottom wall having an axial aperture there-

through for receiving the shank of said T-nut means, an annular segment of said bottom wall means around said axial aperture finished to sealably engage said piping means sealing face, elastomer bellows means having convolutes axially disposed between an open mouth portion and an axially apertured base portion, said convolutes having an external diameter less than



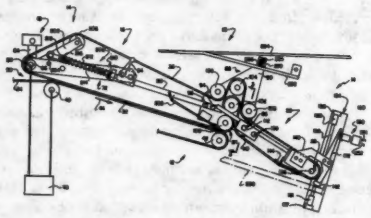
said rigid cup wall, said base portion aperture sized to axially receive therewithin and seal thereabout said T-nut shank and confinement ring means disposed externally of said bellows base portion for confining said base portion radially in a space between said confinement ring means and said cup bottom wall when said T-nut shank is turned into said threaded bore means.

4,564,189

ARTICULATING SHEET MATERIAL CONVEYOR

Harry C. Noll, Jr., Rouses Point, N.Y., assignor to Harris Graphics Corporation, Melbourne, Fla.

Filed Apr. 19, 1984, Ser. No. 601,806
Int. Cl.[4] B65H *29/14, 29/50, 31/32*
U.S. Cl. 271—201 **13 Claims**



6. An apparatus for feeding a stream of sheet materials from a source location to a stacking workstation, said apparatus comprising:

a lower conveyor located between said source location and said stacking workstation, said lower conveyor transporting sheet materials from said source location to said stacking workstation;

an upper conveyor including a first conveyor section positioned above an end portion of said lower conveyor near said stacking workstation, said first conveyor section and said lower conveyor sandwiching said stream of sheet materials therebetween as said sheet materials are transported to said stacking workstation, said first conveyor section being pivotably fixed at an end upstream of said stacking workstation, said upper conveyor further including a second conveyor section pivotably mounted adjacent a downstream end of said first conveyor section, said second conveyor section extending beyond a downstream end of said lower conveyor and over a movable loading support of said stacking workstation, a downstream end of said second conveyor section adapted to be operatively coupled to a top of a stack of sheet materials being stacked on said movable loading support, sheet materials entering a sandwich portion between said first conveyor section and said lower conveyor causing said downstream end of said first conveyor section to pivot away from said lower conveyor, said second conveyor section pivoting with respect to said first conveyor section retaining said downstream end of said second conveyor section operatively coupled to the top of the stack of sheet materials being stacked;

drive means operatively connected to said lower conveyor and said upper conveyor for driving belts on said lower and said upper conveyors; and

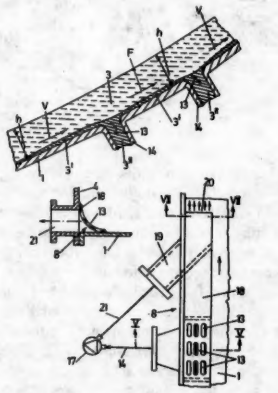
transformer section operatively connected to said downstream end of said first conveyor section and an upstream end of said second conveyor section, said first and said second conveyor sections having a continuous, common belt, said transfer section including belt rollers arranged to permit pivotal action between said first and said second conveyor sections while retaining belt contact between said upstream and downstream end of each said first and said second conveyor sections.

4,564,190

APPLIANCE FOR PRACTICING AQUATIC SPORTS

Otto Frenzl, Lanserstrasse 56, A-6080 Innsbruck, Austria

Filed May 23, 1983, Ser. No. 497,205
Claims priority, application Austria, Jun. 7, 1982, 2191/82
Int. Cl.[4] A63G *21/18*
U.S. Cl. 272—17 **6 Claims**



1. An appliance for practicing aquatic sports using gliding devices supported atop a turbulent, non-separated flow of water, comprising:

a. an open water reservoir having a sloping bottom surface, surrounded by substantially vertical side walls, water being passed from a feed nozzle along the lower rim of said bottom surface upwardly to an overflow along the upper rim of said bottom surface;

b. apertures through the bottom surface and side walls of said reservoir at least in the regions of each boundary layer in which the upwards flowing portions of water are increasingly slowed down by friction, said apertures forming the mouths of discharge pipes for the discharge of portions of slowed down water;

c. additional apertures through the bottom surface and side walls of said reservoir at least in the regions of each boundary layer in which the upwards flowing portions of water are slowed down by friction, said additional apertures forming the mouths of feed pipes for feeding water at an increased flow rate substantially tangential to the direction of flow of said turbulent flow of water for accelerating portions of slowed down water;

d. means for connecting each of said apertures with a respec-

tive one of said additional apertures such that said apertures and said respective additional apertures form the mouths of a common pipe; and

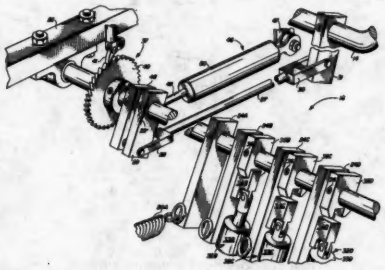
e. means associated with said common pipe discharging portions of slowed down water through the first of said apertures and refeeding them at an increased flow through said respective additional apertures to other portions of slowed down water.

4,564,191

ARM WRESTLING MACHINE

Norman M. Atkin, 5620 Amistad NE., Albuquerque, N. Mex. 87111

Filed Jun. 4, 1984, Ser. No. 617,252
Int. Cl.⁴ A63B *5/00*
U.S. Cl. 272—67 **7 Claims**



1. An arm wrestling apparatus comprising:

a frame forming a table-like playing surface,

moveable handle means located on said frame and positioned above said surface for grasping and moving by a user,

a drive shaft journalled on said frame and connected to said handle means for rotation thereby,

adjustable biasing means connectable to said drive shaft for urging pivotal movement of said handle means in one direction,

said biasing means comprising a plurality of springs, some of which are selectively connectable to said drive shaft, and a solenoid means for selectively connecting said springs to said drive shaft associated with each of said springs

stop means associated with said frame means adjacent said drive shaft for limiting the extent of rotative movement of said handle means,

an elbow rest area positioned on said table-like playing surface and located below said handle means with the user putting his/her elbow in the elbow rest area and grasping said handle means when the apparatus is in use,

said handle means being moveable from an upper position down to a lower position at a level comparable to and to the side of the elbow area,

a depressable touch pad and a pad switch for scoring said touch pad linked to said pad switch operable in response to depression thereof,

an electrical signal means actuably connected to said touch pad,

a first circuit means for connecting said pad switch across a source of electrical power,

lockout means releasably engaging said drive shaft to prevent use of said apparatus,

solenoid means for controlling said lockout means to prevent unauthorized use of the apparatus,

a timer for controlling the length of authorized use of the apparatus,

means for selecting the springs to be connected to said drive shaft,

a coin acceptor, and

a second electrical circuit means for connecting in series across a source of electrical power said coin acceptor, the solenoids connected to the user selected springs, said timer and said solenoid means.

4,564,192

MARTIAL ARTS TRAINING APPARATUS AND METHOD

Leizer Lebowitz, 2396 Warrensville Center Rd., University Heights, Ohio 44118

Filed Jan. 25, 1984, Ser. No. 573,660
Int. Cl.⁴ A63B *69/22*
U.S. Cl. 272—76 **15 Claims**

1. Training apparatus comprising support means, a pair of limb members connected with said support means and being adapted for universal movement relative to said support means, said limb members being yieldably and resiliently interconnected with each other in a manner that allows one limb member a range of movement relative to the other limb member in response to an external impact on the one limb member and causes a reaction force to be applied to the other limb member to cause follow-up movement of the other limb member when the one limb member is caused to move by an external impact, said support means comprising an axially extending post, universal coupling means for connecting each of said limbs to said post for universal movement relative to said post, said post being supported for rotation about its central axis and being supported for limited axial movement, to allow rotational and axial movement of said limb members along with said post, means for pivotally coupling each limb member to the universal coupling means so that each limb member can pivot relative to the universal coupling means that couples the limb member with the post, said spring means biasing each arm member to a neutral position, said universal coupling means comprising a ball connected to said post, and a socket coupled to said ball having universal movement relative to said ball, and each of said limb members being pivotally secured to said socket to allow each limb member to pivot relative to said socket, and to move universally with said socket relative to said ball.

4,564,193

EXERCISING DEVICE FOR LIFTING WEIGHTS

Lester Stewart, 6851 E. Paradise Pkwy., Scottsdale, Ariz. 85251

Filed Dec. 12, 1983, Ser. No. 560,755
Int. Cl.⁴ A63B *21/06*
U.S. Cl. 272—118 **10 Claims**

1. A versatile adjustable universal exercise machine which uses detachable weights, said exercise machine comprising:

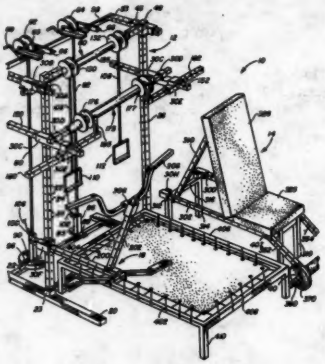
(a) a frame, a base supporting said, said frame having at least one upright frame member detachable from said base;

(b) at least one cable reel adjustably supported on said frame;

(c) a cable system including a flexible cable having a first end secured at said take-up reel and extendable about said one cable reel and having a handle at the other end for the user to grasp;

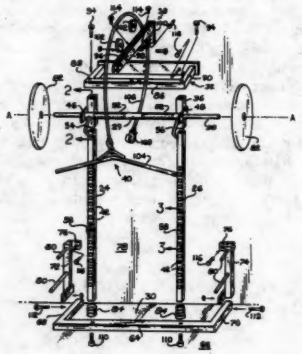
(d) a cable take-up reel means on said frame for varying the length of said flexible cable in accordance with the exercise to be performed with the flexible cable and which varies the position of the user relative to the frame;

(e) a guide rod supported on said frame; and
(f) a weight lift slidable along said guide rod and attached to



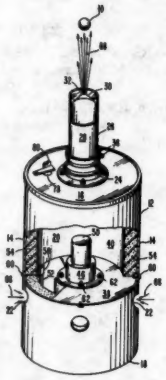
said cable by a pulley said lift permitting weight to be selectively positioned thereon to obtain a desired resistance force to extension of said cable at said handle.

4,564,194
EXERCISE APPARATUS
Fred Dawson, Spartan Manufacturing, 2270 Canons Garden Ave., San Jose, Calif. 94086
Division of Ser. No. 555,078, Nov. 25, 1983, abandoned. This application Apr. 8, 1985, Ser. No. 720,973
Int. Cl.[4] A63B *13/00*
U.S. Cl. 272—123 **12 Claims**



1. A weight lifting station comprising:
a pair of separated, substantially vertical guide posts;
elongated, substantially horizontal bar means adapted to receive one or more exercise weights extending between said guide posts and having an axis of rotation;
means attaching said bar means to said guide posts such that said bar means may reciprocate in a direction parallel to said guide posts and may at least partially rotate around said axis; and
pivotal stop means attached to said bar means for engaging at least one of said guide posts, said stop means being operated by a rotation of said bar means.

4,564,195
TENNIS BALL SUPPORT DEVICE
Robert H. McClure, 101 Farber Rd. A4, Princeton, N.J. 08540; Robert W. Peach, 888 Pine Trail, Arnold, Md. 21012, and John R. Peach, 3606 Moss Side Ave., Richmond, Va. 23222
Filed Jun. 13, 1984, Ser. No. 620,282
Int. Cl.[4] A63B *69/38*
U.S. Cl. 273—29 A **16 Claims**

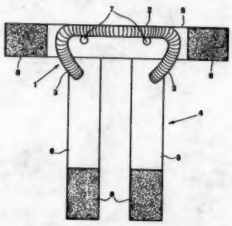


1. A tennis ball support device comprising:
(a) a housing including a wall, top and bottom with said top extending across the top of said wall to define a chamber therein, said housing defining at least one inlet aperture therein to readily allow flow of air from the external environment into said chamber, said housing defining an outlet aperture to readily allow flow of air outwardly from said chamber;
(b) an outlet control positioned adjacent to said outlet aperture to control the flow of air therethrough, said outlet control comprising a release nozzle which defines a release bore therethrough which air is forced to support a tennis ball thereabove, said release nozzle being movable in and out with respect to said housing and said chamber means;
(c) a mounting platform positioned extending across said chamber to divide same into two sections, said chamber now including an outlet zone in fluid flow communication with respect to said outlet aperture and an inlet zone in fluid flow communication with communication between said inlet zone and said outlet zone, said mounting platform defining a mounting aperture therein;
(d) a blower mounted securely with respect to said mounting platform in a position extending through said mounting aperture, said blower including an air intake positioned within said inlet zone and an air outlet exhaust positioned within said outlet zone, said blower being operable to draw in air through said intake and blow air out through said air exhaust; and
(e) a mounting attached with respect to said mounting platform for holding same in position extending in a horizontal orientation.

4,564,196
ANKLE APPLIANCE FOR PLAYING FOOTBALL
Italo Carbonetti, 11 Via Prassitele, 00125 Axa Acilia Sud (Roma), Italy
Filed Jul. 26, 1983, Ser. No. 517,273
Claims priority, application Italy, Sep. 16, 1982, 49129 A/82
Int. Cl.[4] A43B *5/00*
U.S. Cl. 273—67 B **3 Claims**

1. An ankle apparatus for kicking a ball comprising a support

member of web material, said support member including two substantially parallel elongated strips depending downwardly from a center portion of a third elongated strip, said two elongated strips spaced and each having its longitudinal axis substantially perpendicular to the longitudinal axis of the third elongated strip, and each of the strips being provided with fastening means at the free ends thereof, thereby enabling the



two substantially parallel strips to be secured under the sole of the foot and the third strip to form a continuous band around the ankle; and a flexible, semi-rigid, elongated-rounded ball contacting member, being 15–25 mm in diameter, comprising two free ends, each having a downwardly depending hook portion and a center portion therebetween, wherein the contacting member center portion is fixed to the third strip center portion substantially along the longitudinal axes thereof.

4,564,197

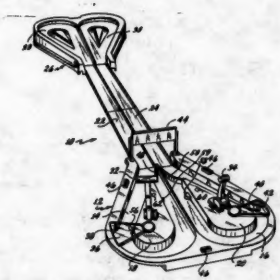
PORTABLE TOY RACING SET

Gerard L. Lambert; Michael T. McKittrick, both of Torrance; Hubert A. Rich, Westminster, and Gary M. Saffer, Torrance, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 20, 1984, Ser. No. 684,405

Int. Cl.[4] A63H *18/14*

U.S. Cl. 273—86 D **7 Claims**



1. A toy racing set, comprising:

a track for containing a toy vehicle, including a generally U-shaped curved portion; and

booster means for accelerating the vehicle on the track, including

an arm which extends over the track at a height which is above that of the vehicle and which is pivotably mounted about an axis substantially perpendicular to the track, the axis being offset from the center of the U-shaped curved portion of the track so that the arm pivoting motion is eccentric with respect to the track, a finger which depends from the arm a distance sufficient to contact the vehicle traveling on the track, means for accelerating the arm about the axis from a first position where the finger is adjacent one side of the track at a point which is clear of the path of the vehicle to a second position where the finger is in the path of the vehicle, whereby by accelerating the arm just after the vehicle has passed the first position, the finger contacts the vehicle and accelerates it as it is moving on the track.

4,564,198

APPARATUS FOR USE IN PLAYING A BALL GAME

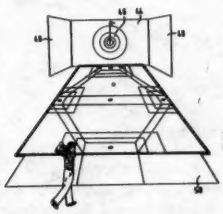
Tommy S. O. Kwik, No. 298A S. Bridge Rd., Singapore 0105, Singapore

Filed Nov. 4, 1982, Ser. No. 439,136

Claims priority, application United Kingdom, Nov. 4, 1981, 8133290

Int. Cl.[4] A63B *67/02*

U.S. Cl. 273—176 F **10 Claims**



1. Apparatus for playing a ball game comprising a frame having a base and an upwardly extending perimeter wall substantially defining the perimeter of the base, the base having a plurality of means each defining a respective aperture capable of receiving a ball used to play the game and including at least one means defining a centre aperture located adjacent the centre of the base with the other apertures being side apertures which are located adjacent the perimeter wall, the base being provided with markings defining a set of three similar rectangularly-shaped areas of decreasing size each associated with a respective side aperture.

4,564,199

TRACER GOLF BALL

James S. Adams, 5730 S. Mackinaw, Houston, Tex. 77053

Filed Jan. 30, 1984, Ser. No. 575,195

Int. Cl.[4] A63B *43/00, 69/36, 37/02*

U.S. Cl. 273—213 **1 Claim**

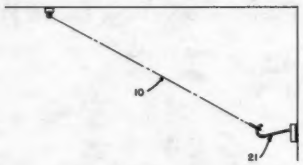
1. A tracer golf ball, comprising, in combination, a spherical outer wall having a dimpled outer skin, a rubber core inside said outer wall, a spherical opening in a center of said core, a thin membrane lining said opening, a smoke producing chemical agent surrounded by said membrane, a radially extending opening through said wall extending from said membrane to an outer surface of said skin, perforations in said membrane for easy rupture of said membrane when said ball is being struck, for outward escape of said chemical agent, and a plurality of flotation air chambers contained in said core.

4,564,200

TETHERED RING GAME WITH HOOK CONFIGURATION

Wolson J. Loring, 1035 Mulberry St., Reading, Pa. 19604, and Charles C. Schaedler, 310 Noble Ave., Shoemakersville, Pa. 19555

Filed Dec. 14, 1984, Ser. No. 681,934
Int. Cl.[4] A63B *67/06*
U.S. Cl. 273—332 **10 Claims**



1. A tethered ring game with a ring, a hook and a tether in combination comprising:

a. A ring assembly with a cube shaped pendulum base member with an overhead affixing means on its face adjacent to the overhead and which has disposed on its face opposite the adjacent face a tether connecting means connected to which is tied at a free end thereof a flexible tether of a defined length whose other end is tied to a ring, said length being such that the tether is tautly held from the pendulum base to

b. a hook portion of a hook member in a hook assembly which is mounted to an upright by affixing means a defined elevation from a floor and in which the hook assembly consists of a rectangularly shaped plate which forms a hook block which has the upright affixing means on its face adjacent to the upright and has installed centrally on its face opposite the adjacent face a mounting portion of the hook member which mounting portion has therein contained a break of a minimum radius whereby an obtuse angle is formed with the mounting portion and having at a defined distance from a free end of the hook member a sweep of circular arc which is less than 180°.

4,564,201

METHOD AND APPARATUS FOR SEALING A DISCONTINUITY IN A TUBULAR ASSEMBLY

Joseph R. Hannah, Reddish, England, assignor to Mavie Limited, Cheshire, England

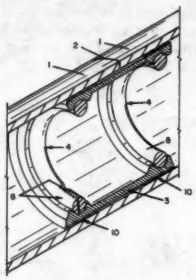
Filed Aug. 5, 1983, Ser. No. 520,854
Claims priority, application United Kingdom, Aug. 5, 1982, 8222616
Int. Cl.[4] F16J *15/02*
U.S. Cl. 277—1 **14 Claims**

1. A method of sealing a discontinuity in a tubular assembly, comprising:

providing over the discontinuity on the interior surface of the tubular assembly a sealing element;

providing radially expensive clamping rings, one on each side of the discontinuity for expansion against the inner surface of the sealing element, wherein

each of said clamping means includes adjacent end portions, each end portion including teeth formations which mesh with the teeth formations on the other end portion, said teeth formations being defined by ridges and valleys which extend radially inward of the clamping ring and said teeth being formed such that they allow movement of the end portions away from each other to provide for said radial expansion but prevent movement of the end portions towards each other so that once expanded, the clamping ring remains in its expanded position; and



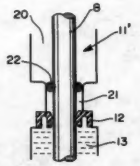
expanding each of the clamping rings so as to clamp the outer surface of the sealing element against the tubular assembly.

4,564,202

SEAL FOR PISTON ROD OF STIRLING ENGINE

Yutaka Momose, Anjyo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 18, 1985, Ser. No. 712,721
Claims priority, application Japan, Mar. 31, 1984, 59-46998[U]
Int. Cl.[4] F16J *15/40, 15/56*
U.S. Cl. 277—3 **2 Claims**



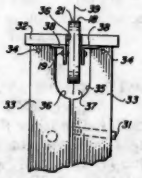
1. In a seal for a piston rod of a Stirling engine having a reciprocating piston rod, an intermediate chamber surrounding the piston rod and held at a minimum pressure of a working gas, a fluid-filled chamber surrounding the piston rod for lubricating the piston rod, and an oil scraper disposed between the intermediate chamber and the fluid-filled chamber for blocking flow of a fluid from the fluid-filled chamber to the intermediate chamber, an improvement comprising an annular sealing member fixedly secured to the piston rod at a position where said annular sealing member will be situated immediately above the oil scraper when the piston rod is at a bottom dead center point of its reciprocating motion, the intermediate chamber being formed to include a first space of a first diameter and a second space of a second diameter smaller than said first diameter, said second space having its diameter sized to an outer diameter of said annular sealing member and being contiguous to the oil scraper, whereby when the piston rod descends toward the bottom dead center point, said annular sealing member is carried thereby into said second space toward the oil scraper to pressurize said second space in order to forcibly return a fluid from said second space to the fluid-filled chamber through the oil scraper.

4,564,203

TRANSPORT AID FOR A-FRAME STEPLADDER

Ronald E. Wilson, 6218 E. Paradise La., Scottsdale, Ariz. 85254

Filed Nov. 23, 1984, Ser. No. 674,238
Int. Cl.[4] B62B 1/18
U.S. Cl. 280—47.32 1 Claim



1. A transport aid for a narrow oblong object, said object bounded by a parallelepiped having a narrow first end longitudinally opposite a narrow second end, between which ends communicates opposing narrow longitudinal sides and opposing broad longitudinal faces, a plane of weight symmetry parallel said opposing broad longitudinal faces, said transport aid comprising:

single wheel means having medially defined a plane of rotation for balancingly supporting said first end in coaction with manual support and propulsion of said second end; and

coupling means having axle means coaxial said single wheel means, said axle means orthogonal said plane of weight symmetry, said coupling means coupled to said narrow oblong object adjacent a dihedral intersection of said narrow first end and one of said narrow longitudinal sides, said medially defined plane of rotation coplanar said plane of weight symmetry,

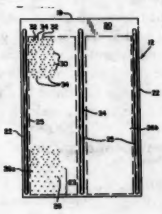
wherein said object comprises a collapsible A-frame type stepladder having in collapsed condition steps parallel said narrow first end communicating between legs adjacent said narrow longitudinal sides, an apical top step adjacent said narrow first end, said apical top step having a forked end adjacent a dihedral intersection of said narrow first end and one of said narrow longitudinal sides, a pair of said legs having cooperating notch means adjacent said forked end, said coupling means comprising axle mounting means straddlingly mounting said axle means adjacent said forked end of said apical top step, said single wheel means protrudingly disposed within a recess, said recess comprising said forked end and said cooperating notch means.

4,564,204

SPRAY-SUPPRESSANT MUD FLAP

Patrick F. Sullivan, 3645 Glen Oak, and Russell R. Wakefield, 5535 Cody, both of Eugene, Oreg. 97405

Filed Aug. 25, 1983, Ser. No. 526,436
Int. Cl.[4] B62D 25/16
U.S. Cl. 280—154.5 R 11 Claims



1. A spray-suppressant material for use on a vehicle to reduce the amount of spray produced by such a vehicle during operation on a wet roadway, comprising:

(a) a base of flexible material, including a generally flat base surface;

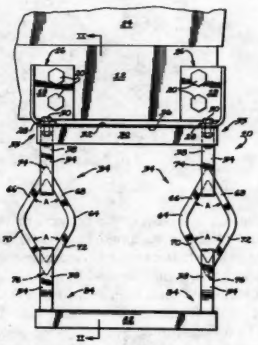
(b) a plurality of generally parallel elongate flexible fingers extending outwardly from said base surface, each said finger having a base and a central axis, and having a height at least about 2½ times as great as its thickness at its base, said fingers being located on and distributed over said base surface, so as to prevent an increased area in the paths of fluid droplets traveling toward said spray-suppressant material, said plurality of fingers being arranged in a plurality of rhombic groups, said rhombic groups being arranged in parallel rows defining channels between said rows, with said flat base surface within each channel being free from said fingers, and each of said fingers extending from said base in a non-perpendicular direction with the central axis of each said finger defining an angle in the range from about 2° to about 15° from perpendicular to said base surface.

4,564,205

FLEXIBLE STEP ASSEMBLY

Dennis R. Shookman, Oreana, and Vergil P. Hendrickson, Decatur, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US82/01365, § 371 Date Sep. 30, 1982, § 102(e) Date Sep. 30, 1982
PCT Filed Sep. 30, 1982, Ser. No. 638,445
Int. Cl.[4] B60R 3/02
U.S. Cl. 280—166 5 Claims



1. In a flexible step assembly for a vehicle having a frame and a foot supporting member suspended from said frame by a pair of laterally spaced chain assemblies, the improvement comprising:

a first link in each of said chain assemblies having first and second side portions that converge toward one another to form a pre-selected angle and having a generally triangular cross-section with two sides of said triangle forming an angle corresponding to said pre-selected angle formed by said link side portions;

said first link being secured to said vehicle frame;

a second link in each of said chain assemblies having first and second side portions that converge toward one another to form an angle, and third and fourth side portions that converge toward one another to form an angle, said third and fourth side portions being connected to said first and second side portions at a mid-portion of said second link, said angles formed by said side portions of said second link corresponding to said pre-selected angle, said second link having a triangular cross-section with two sides of said

triangle forming an angle corresponding to said pre-selected angle; and

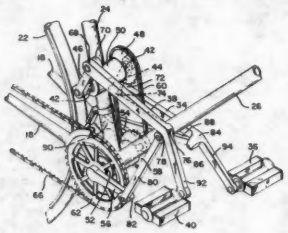
a third link in each of said chain assemblies having first and second side portions that converge toward one another to form an angle corresponding to said pre-selected angle and having a triangular cross-section with two sides of said triangle forming an angle corresponding to said pre-selected angle, and being connected to said foot supporting member, said third link being positioned with the first and second side portions thereof in interlocking engagement with the third and fourth side portions of the second link, and the first and second side portions of said second link being in interlocking engagement with the first and second side portions of the first link, the two sides of the respective triangular cross-sections of the respective links being in nesting engagement with the angles formed by the respective interlocking side portions of said links to provide a wedging force therebetween to render the chain assemblies substantially rigid when a downward force of a pre-selected magnitude is applied to said foot supporting member.

4,564,206

PEDAL DRIVE

Larry G. Lenhardt, 91666 Green Hill Rd., Junction City, Oreg. 97448

Filed Oct. 11, 1983, Ser. No. 540,534
Int. Cl.[4] B62M *1/00*
U.S. Cl. 280—252 **16 Claims**



1. A pedal drive for driving a bicycle or the like having a driven wheel rotatably mounted to a frame, comprising:

a first rotatable shaft mounted to said frame;

a first sprocket attached to said first shaft;

a second rotatable shaft mounted to said frame at a location spaced apart from said first shaft, said first and second shafts being positioned generally one above the other;

a second sprocket attached to said second shaft and aligned in a common plane with said first sprocket; and

a first endless chain extending about and interconnecting said first and second sprockets;

a third sprocket attached to said second shaft;

a second endless chain extending about and interconnecting said third sprocket and a sprocket attached to said driven wheel;

a first crank arm attached to said first shaft to rotate said first shaft;

a second crank arm attached to said first shaft to rotate said first shaft, said second crank arm extending generally opposite to said first crank arm;

a third crank arm attached to said second shaft to rotate said second shaft;

a fourth crank arm attached to said second shaft to rotate said second shaft, said fourth crank arm extending generally opposite to said third crank arm;

a first pedal arm carrying a first pedal, said first pedal arm pivotally connected to said first crank arm;

a first link pivotally connected to said first pedal arm at a location spaced apart from the location of connection of said first pedal arm to said first crank arm, and pivotally connected to said third crank arm;

a second pedal arm carrying a second pedal, said second pedal arm pivotally connected to said second crank arm; and

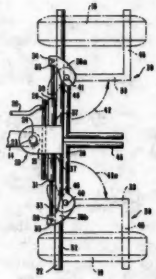
a second link pivotally connected to said second pedal arm at a location spaced apart from the location of connection of said second pedal arm to said second crank arm, and pivotally connected to said fourth crank arm.

4,564,207

HYDRAULIC WHEEL LIFT SYSTEM FOR TOW VEHICLES

Calvin W. Russ, 2119 E. Indian River Rd., Norfolk, Va. 23523, and David A. Craze, 1309 Ormer Rd., Chesapeake, Va. 23325

Filed Oct. 17, 1983, Ser. No. 542,666
Int. Cl.[4] B60P *3/12*
U.S. Cl. 280—402 **17 Claims**



1. A device adapted to be attached to a towing vehicle and adapted to raise the wheels of a vehicle to be towed, said device comprising:

(a) at least one main boom adapted to be mounted on said towing vehicle;

(b) a wheel boom connected to said main boom in a position substantially transverse to said main boom;

(c) a pair of lift-arms, each of said arms being substantially L-shaped and each being pivotally attached to said wheel boom;

(d) means for pivoting said lift-arms between a rest position in which said lift-arms are adjacent to said wheel boom and an operative position in which each lift arm forms a substantially U-shaped frame with a portion of said wheel boom, said U-shaped frame comprising means for engaging and supporting the underside of a respective vehicle tire, said lift-arm pivoting means comprising a pair of hydraulically operated cylinders, each of said hydraulic cylinders including a cylinder portion and an arm portion which is adapted to reciprocate along a linear path parallel to the longitudinal axis of said wheel boom linear motion of respective hydraulic cylinders causing each of said generally L-shaped arms to pivot and to form, together with a portion of said wheel boom, a generally U-shaped, outwardly directed wheel bowl, each wheel bowl comprising means for receiving a vehicle wheel.

17. A device adapted to be attached to a towing vehicle and adapted to raise the wheels of a vehicle to be towed, said device comprising:

(a) at least one main boom adapted to be mounted on said towing vehicle;

(b) a wheel boom connected to said main boom in a position substantially transverse to said main boom, and means for moving said main boom in both horizontal and vertical planes, said wheel boom being pivotally connected to said main boom and being pivotal over at least 55° angle in

either direction, as viewed along a horizontal plane, said wheel boom and said main boom being connected by a flange having one arcuate end attached to a central point of said wheel boom, said flange having a flange aperture located adjacent to an end of said flange opposite from said arcuate end, said flange aperture being aligned with an aperture in said main boom, a first pin being adapted to be inserted through said flange aperture and into said main boom aperture thereby pivotally connecting said wheel boom to said main boom;

(c) a pair of tire lift-arms, each of said arms being substantially L-shaped and each being pivotally attached to said wheel boom, on opposite sides of the connection between said wheel boom and said main boom, each of said lift-arms comprising an integral, arcuately shaped base portion and an arm portion having upper and lower segments, each base portion having first and second apertures, said second aperture of said base portion being located adjacent to said lower segment of said L-shaped arm; and

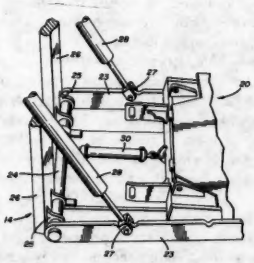
(d) means for pivoting said lift-arms between a rest position in which said lift-arms are adjacent to said wheel boom and an operative position in which each lift-arm forms a substantially U-shaped frame with a portion of said wheel boom, said U-shaped frame comprising means for engaging and supporting the underside of a respective vehicle tire.

4,564,208

TRAILER STABILIZER

Paul S. Kudler, New Waterford, Ohio, assignor to Majestic Rides Mfg. Co., Inc., New Waterford, Ohio

Filed Mar. 19, 1984, Ser. No. 590,903
Int. Cl.[4] B62D *53/00*
U.S. Cl. 280—423 B **5 Claims**



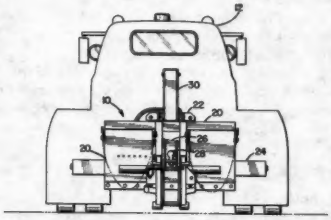
1. An improvement in a portable self-contained amusement ride, said amusement ride including a main trailer frame having a rear wheel support frame secured to a first end thereof, a truss assembly secured in spaced vertical relation to said main frame, pairs of oppositely disposed spaced support posts secured to said main trailer frame supporting said truss assembly, the improvement comprising a trailer gooseneck frame movably secured to a second end of said main trailer frame, a pair of oppositely disposed arms movably secured to said main trailer frame and said gooseneck frame, a self-adjusting stabilizer secured between said main trailer frame and said trailer gooseneck frame to reduce relative movement therebetween by adjustably urging the trailer gooseneck frame constantly towards the main trailer frame, means for moving said gooseneck frame in relation to said main trailer frame.

4,564,209

TRAILER HITCH ASSEMBLY

Bertis N. Kingsley, and Ronald D. Fisher, both of P.O. Box 1010, Centralia, Ill. 62801

Filed Sep. 22, 1983, Ser. No. 534,612
Int. Cl.[4] B60D *1/18*
U.S. Cl. 280—468 **18 Claims**



1. A hitch assembly for attachment to a towing vehicle for towing a trailer, the assembly comprising:

(a) a frame fixedly mounted to the towing vehicle and including an upper portion, a lower portion and means connecting said upper and lower portions,

(b) a transverse carriage mounted to the frame,

(c) a horizontal ram assembly disposed between the frame and the transverse carriage for moving the transverse carriage laterally relative to the frame, said ram assembly including an elongate piston extending on both sides of the carriage, said piston having ends engageable with the frame and a length extending substantially between engagement points and a length at least as great as the travel of the carriage and having a piston head disposed intermediate the piston ends and a cylinder attached to the carriage for movement of the cylinder and the carriage relative to the piston,

(d) a vertical lift carriage mounted to the transverse carriage, and

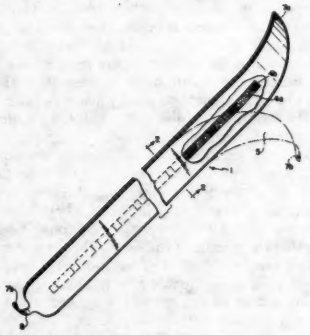
(e) a vertical ram assembly disposed between the frame and the transverse carriage for movement of the vertical carriage relative to the transverse carriage.

4,564,210

CROSS-COUNTRY SKI

Anthony R. Case, 518 Federal Ave., East, Seattle, Wash. 98102

Filed Sep. 26, 1983, Ser. No. 535,861
Int. Cl.[4] A63C *5/00*
U.S. Cl. 280—604 **9 Claims**



1. A cross-country ski comprising a ski body and a detachable running surface, said ski body having an underface with a longitudinal slot therein, metal edges having an underface and

extending beneath said underface of said ski body and a climbing surface permanently fixed in said slot, and said running surface having an underface and a backside, said ski further comprising:

a first fastening means permanently fixed in said slot;

a second fastening means on the backside of said running surface;

a first element of a third fastening means on the underface of the ski body, and

a second element of the third fastening means on the backside of the running surface;

said first and second fastening means cooperating to secure the running surface to the underface of the ski body and said third fastening means serving to prevent creeping of the running surface relative to the ski body.

4,564,211

SKI BRAKE

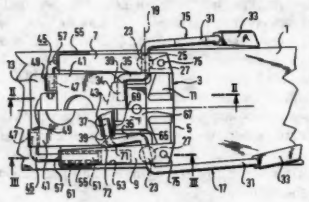
Max Luitz, Blaichach-Bihlerdorf, and Eugen Weiss, Burgberg, both of Fed. Rep. of Germany, assignors to Ess GmbH Skibindungen, Fed. Rep. of Germany

Filed Oct. 12, 1982, Ser. No. 433,919

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1981, 3140819

Int. Cl.[4] A63C *7/10*

U.S. Cl. 280—605 **16 Claims**



1. Ski brake having a base plate attached to the top surface of a ski; having at least one brake lever between two ends thereof supported on the base plate pivotably both about a first axis extending transverse to the lengthwise direction of the ski and substantially parallel to the top ski surface and also about a second axis extending substantially perpendicular to the top ski surface, one end of the brake lever extending freely; having a spring coupled at one end thereof to the base plate; having a foot pedal coupled at an end thereof to a second end of the spring and connected with the second end of the brake lever, the foot pedal resiliently pretensioned by the spring into a braking position remote from the base plate in which the free end of the brake lever projects below the bottom surface of the ski, the foot pedal moveable into a ready position adjacent to the base plate against the spring pretensioning in which the free end of the brake lever is lifted into the region of the top ski surface; and having an inclined slide surface between the foot pedal and the base plate acting in the lengthwise direction of the ski upon the foot pedal approaching the ready position to slide the foot pedal lengthwise of the ski away from the second axis and produce a pivotal movement of the free end of the brake lever about the second axis and directed toward the middle of the ski, characterized in that the brake lever is connected to the foot pedal by a linkage positioned between the second axis and the middle of the ski for the pivotal movement about the first and second axes; in that the end of the foot pedal coupled to the spring is slidable along guidance means in the lengthwise direction of the ski and is guided upon the base plate pivotably about an axis which extends substantially parallel to the top ski surface and transverse to the ski and is pretensioned by the spring in the braking position which is determined by a projection of the base plate; in that the slide surface engages the end of the foot pedal which bears the linkage of the brake lever; in that a bearing portion having a bearing aperture extending in the direction of the first axis and pivotably about the second axis is attached to the base plate; in that from one end of a linkage shaft of the brake lever which pivotably transverses the bearing aperture a brake arm extends freely and from the opposite end a crank arm is spaced oppositely from the brake arm; and in that the crank arm spaced from the linkage shaft bears a linkage pin which engages a slotted bearing aperture of the foot pedal.

4,564,212

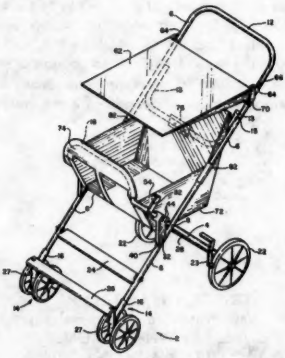
BABY STROLLER AND FRAME STRUCTURE THEREFOR

Michael J. Orlandino, 1455 Kendall Dr., Boulder, Colo. 80303, and David M. Chapman, 2018 W. 76th St. #2704, Denver, Colo. 80221

Filed Dec. 12, 1983, Ser. No. 560,145

Int. Cl.[4] B62B *7/06*

U.S. Cl. 280—642 **7 Claims**



1. A foldable baby stroller frame including a pair of spaced apart sideframes, and means for transversely connecting said sideframes to provide a frame structure, wherein the improvement comprises, in combination:

each sidewall being comprised substantially of a pair of pivotally connected overlapped cross-struts; and

means for releasably latching said cross-struts into a braced, stable, rigid X configuration, said latching brace means including a head portion defining a through-opening for receiving and being fixedly attached to one said cross-strut, at a distance from its pivotal connection to the other said cross-strut, and a foot portion defining a gripping latching channel dimensioned to releasably receive, latch to, and grip the other said cross-strut to provide a rigid X configuration, whereby said latching brace means is substantially vertical when in latching and bracing use.

4,564,213

STRUT TYPE VEHICLE SUSPENSION MECHANISM

Jiro Maebayashi, and Shoji Kasai, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 438,654, Nov. 2, 1982, abandoned. This application Feb. 22, 1985, Ser. No. 704,151

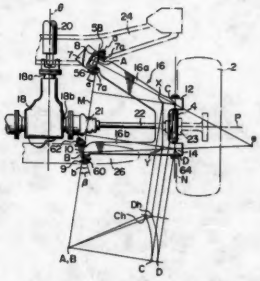
Claims priority, application Japan, Nov. 5, 1981, 56-178217

Int. Cl.[4] B60G *3/00*

U.S. Cl. 280—690 **2 Claims**

1. A vehicle suspension mechanism including carrier means for carrying a rear wheel rotatably about an axis of rotation, strut means including a shock absorbing strut having an upper end connected with a vehicle body and a lower end connected with said carrier means, swingable arm means including a pair

of interconnected lever arms adapted to move as a unit and pivotably connected through resilient means with said vehicle body at a longitudinally spaced first forward pivot point and a first rearward pivot point and with said carrier means at a longitudinally spaced second forward pivot point and a second rearward pivot point, said first forward and rearward pivot points being located with respect to said second forward and rearward pivot points so that a line passing through said first forward and rearward pivot points is spaced apart from a line passing through said second forward and rearward points by a distance which increases in the rearward direction so that pivoting of said swingable arm means toward the vehicle body produces a toe-in movement of the wheel, said first and said second forward pivot points being located with respect to said first and said second rearward pivot points so that a line passing through the first and second forward pivot points intersects a line passing through the first and second rearward pivot points at a point rearwardly of said axis of rotation of the rear wheel and outwardly of a wheel center plane passing through



the center of the rear wheel and perpendicular to the axis of rotation of the rear wheel so that toe-in movements are produced in the rear wheel under an inwardly directed side force and a rearwardly directed brake force, said resilient means including a rubber bush provided at each of said first forward and rearward pivot points and comprised of inner and outer tubes connected with a cylindrical rubber element, each of the rubber bushes having a center and a longitudinal axis inclined with respect to a line connecting the centers of the rubber bushes at the first forward and rearward points and inclined relative to the longitudinal center line of the vehicle body in an outward direction toward the front of the vehicle, the angle of inclination of the longitudinal axis of the bush at the first forward pivot point relative to the longitudinal center line of the vehicle body being greater than the angle of inclination of the longitudinal axis of the bush at the first rearward pivot point relative to the longitudinal center line of the vehicle body, said second forward and rearward pivot points being located in a vertical plane which is inclined outwardly toward the front with respect to the longitudinal center line of the vehicle body.

4,564,214

SUSPENSION SYSTEM FOR MOTOR VEHICLE HAVING VARIABLE SUSPENSION CHARACTERISTICS

Toshimichi Tokunaga; Seita Kanai, and Yoshiaki Anan, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

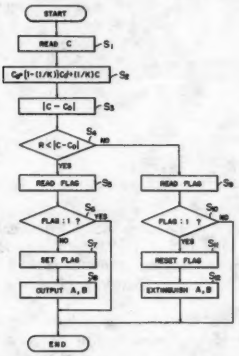
Filed Mar. 15, 1984, Ser. No. 589,946

Claims priority, application Japan, Mar. 18, 1983, 58-46498

Int. Cl.[4] B60G *17/08*

U.S. Cl. 280—707 **10 Claims**

1. A motor vehicle comprising: a body, wheels for supporting said body, suspension means between said body and respective ones of said wheels; said suspension means including resistance means which provide resistance to vertical movement of said body with respect to said wheels, adjusting means for adjusting said resistance means of said suspension means to change the resistance, steering angle sensing means for producing steering angle signals, control means for controlling said adjusting means, said control means including means for comparing a last steering angle signal with an averge value of a plurality of steering angle signals produced by said steering angle sensing means during a period of time immediately preceding said last steering angle signal and generating a differ-



ence signal denoting the difference between said last steering angle signal and said average value of said steering angle signals, and means for comparing said difference signal with a predetermined difference signal value and for providing a drive signal for operating said adjusting means to increase the resistance of said resistance means when said difference signal is larger than said predetermined value.

4,564,215

ELECTRONICALLY CONTROLLED SUSPENSION SYSTEM

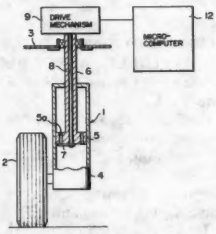
Naotake Kumagai, Aichi, and Minoru Tatemoto, Okazaki, both of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1984, Ser. No. 636,145

Claims priority, application Japan, Aug. 19, 1983, 58-127276[U]

Int. Cl.[4] B60G *11/26*

U.S. Cl. 280—707 **5 Claims**



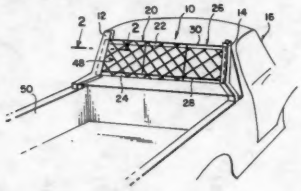
1. In an electronically controlled suspension system equipped with a mode selection switch that permits an alternative choice between a hard mode that puts a vehicle suspension in a hard state and an automatic mode that automatically puts the suspension into a soft state or a hard state depending upon the vehicle conditions, the improvement which comprises control means putting the suspension in the automatic mode when the engine key switch of a vehicle is turned on in preference to the mode to which said mode selection switch has been set.

4,564,216

CREEPER RAMP RACK

John P. Kinyon, and George Spector, both of 233 Broadway, RM 3615, New York, N.Y. 10007

Filed Oct. 31, 1983, Ser. No. 547,079
Int. Cl.[4] B60P *1/00*; B62B *11/00*
U.S. Cl. 280—770 **3 Claims**



1. A creeper ramp rack adapted to be stored in a pair of standards located immediately behind the rear window of a pick-up truck wherein said standards have oppositely disposed means for receiving said rack, comprising:

(a) a first rectangular grillwork panel having top and bottom faces;

(b) a first pair of C-shaped channels each having a first pair of spaced parallel sides, one of said first pair of spaced parallel sides of each C-shaped channel is affixed, in the longitudinal direction, on opposite ends of the bottom face of said first panel;

(c) a second rectangular grillwork panel having top and bottom faces; and

(d) a second pair of C-shaped channels each having a second pair of spaced parallel sides, one of said second pair of spaced parallel sides of each C-shaped channel is affixed, in the longitudinal direction, on opposite ends of the bottom face of said second panel, said first pair and said second pair of C-shaped channels being disposed such that the other of said first pair of spaced parallel sides is received within the space between the parallel sides of said second pair of C-shaped channels and the other of said second pair of spaced parallel sides is received within the space between the parallel sides of said first pair of C-shaped channels so that the two pairs of C-shaped channels slidably engage one another, whereby in one position said rack may be stored in said pair of standards on the pick-up truck to form a protecting grill for the rear window of the pick-up truck and in another position may be lengthened to be placed on the rear end of the truck bed to form a ramp.

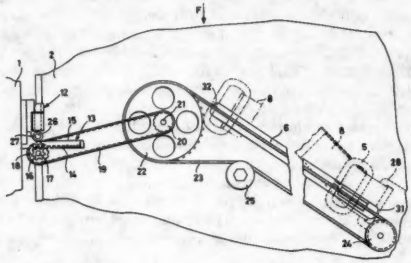
4,564,217

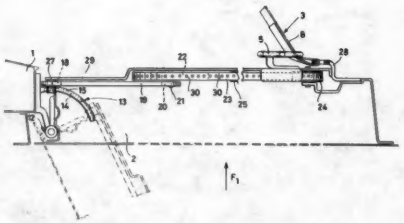
AUTOMATIC POSITIONING DEVICE FOR MOTOR VEHICLE SAFETY BELTS

Ferdinando Paludetto, Cesano Boscone, Italy, assignor to Alfa Romeo Auto S.p.A., Naples, Italy

Filed Nov. 25, 1983, Ser. No. 555,020
Claims priority, application Italy, Dec. 3, 1982, 23636/82[U]
Int. Cl.[4] B60R *21/10*
U.S. Cl. 280—804 **5 Claims**

1. An automatic positioning device for a passive safety seat belt of a vehicle having a body and a door hingedly connected to said body by a hinge having a hinging axis, said safety seat belt having a mobile positioning point defined by a positioning member and controlled by the open and closed positions of said vehicle door whereby to retain and release a seated occupant of said vehicle in accordance with the position of said door, the improvement residing in means for controlling the position of said mobile positioning point, said means comprising a rack bar having one end fixedly secured to said body and freely passing into said door, said rack bar having the shape of a circular arc and being positioned concentric to said hinging axis, a pinion carried by said door for rotation about a shaft fixed to said door, said pinion being positioned relative to said hinging axis to engage said rack bar in meshing relation and to be rotated by said rack bar in response to opening and closing movement of said door, a rectilinear movement amplifier mechanism coupled to said positioning member for converting





rotary movement of said pinion to amplified rectilinear movement of said positioning member, a rail fixedly mounted on said door in a diagonal position, said positioning member being mounted on said rail for guided movement in response to rotation of said pinion.

4,564,218

AUTOMATIC SEAT BELT DRIVING DEVICE

Yoshihiro Yokote, Yokohama, and Kazuo Yamamoto, Sagamihara, both of Japan, assignors to NSK-Warner K.K., Tokyo, Japan

Filed Apr. 16, 1984, Ser. No. 601,003
Claims priority, application Japan, Apr. 28, 1983, 58-63168[U]; Apr. 28, 1983, 58-63169[U]
Int. Cl.[4] B60R *21/10*
U.S. Cl. 280—804 **14 Claims**

1. A driving device for moving a seat belt in an automatic seat belt system between a seat occupant liberating position and a seat occupant restraining position, said device comprising:

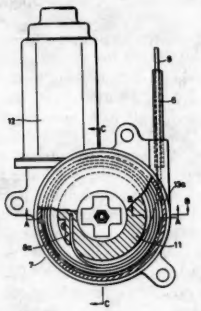
an elongate flexible drive member, one end of said drive member being operatively connected to the seat belt,

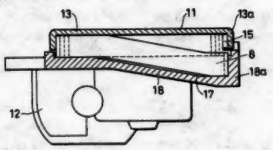
a rotatable member formed with a portion for containing the drive member, the other end of the drive member being attached to said rotatable member and the drive member being taken up into and pushed out from said containing portion by the rotation of said rotatable member,

driving means for rotating the rotatable member,

a fixed side member formed with a port through which the

drive member is taken up into and pushed out from said containing portion, said port lying at a position deviated





from said containing portion in the direction of the rotational axis of the rotatable member.

4,564,219

APPARATUS FOR ADJUSTING THE HEIGHT OF THE UPPER FITTING FOR THE SHOULDER BELT IN A SAFETY BELT SYSTEM

Hans Baden, Norderstedt; Klaus Kühnemann, Willich; Gerhard Sedlmayr, Hamburg; Klaus Straszewski, Quickborn, and Monika Zeumer, Hamburg, all of Fed. Rep. of Germany, assignors to Autoflug GmbH, Rellingen, Fed. Rep. of Germany

PCT No. PCT/DE82/00193, § 371 Date Jun. 2, 1983, § 102(e) Date Jun. 2, 1983, PCT Pub. No. WO83/01233, PCT Pub. Date Apr. 14, 1983

PCT Filed Oct. 1, 1982, Ser. No. 511,170

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1981, 3139419; Oct. 6, 1981, 3139624; Oct. 7, 1981, 3139822; Oct. 21, 1981, 3141702

Int. Cl.[4] B60R *21/10*

U.S. Cl. 280—808 **35 Claims**

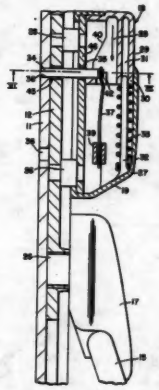
1. An apparatus for adjusting the height of the upper fixing or guide fitting for the shoulder belt of a safety belt system, with said belt being looped through said fitting, resulting in a belt looping axis; said apparatus comprising:

a guide rail having a guide slot and recesses;

a sliding member which is movable within said guide slot of said guide rail, said fixing or guide fitting being supported on said sliding member;

at least one locking member mounted on said sliding member and adapted to engage in said recesses of said guide rail for selective locking and releasing of said sliding member relative to said guide rail, said at least one locking member being symmetrical in construction with regard to its locking and releasing function; said belt looping axis, at said fixing or guide fitting, being located externally of the zone in which the forces between said at least one locking member and said guide rail are transmitted along a plane, a line, or pointwise when said sliding member is locked relative to said guide rail; and

operating means for selectively locking said at least one locking member into, and releasing it from, said recesses of said guide rail to effect said selective locking and releasing of said sliding member relative to said guide rail; said operating means having a finger pressure construction to permit operating thereof with one hand and with substantially no force of hand and arm, a spring-loaded locking member which is longitudinally movable at right angles to



the direction of slide of said sliding member; and in which said operating means for selectively locking and releasing said lockingmember is in the form of a sliding key which is movable parallel to said guide rail in the manner of a known belt buckle having a PRESS buttom, and, by means of suitable configuration, controls the longitudinal movements of said locking member.

4,564,220

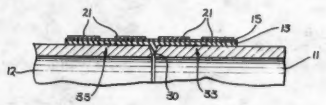
ELASTIC GASKET PIPE COUPLING FOR PRESSURIZED PLUMBING SYSTEMS

Andy B. Sills, and Cecil M. Sills, both of Newport Beach, Calif., assignors to Anaheim Foundry Company, Anaheim, Calif.

Filed Apr. 16, 1984, Ser. No. 600,996

Int. Cl.[4] F16L *21/00*

U.S. Cl. 285—236 **4 Claims**



1. An improved elastic gasket-type pipe coupling for joining adjacent pipe segments, comprising:

a cylindrical elastic gasket having a first annular sealing berm associated with a first pipe segment and a second annular sealing berm associated with a second pipe segment, each sealing beam comprising at least two closely arranged sealing rings, each said ring encircling the outer surface of the associated pipe segment;

a metallic compression band circumferentially disposed about the cylindrical elastic gasket; and

tensioning band encircling the metallic compression band, said tensioning bands disposed on the metallic compression band adjacent to and on both sides of each said sealing berm such that no portion of said tensioning bands is directly over said sealing berms, said tensioning bands upon tightening thereof applying loading force to either side of each said sealing berm and not directly over each said sealing berm thereby forcing each said sealing berm

into a sealing relationship with the associated pipe segment.

4,564,221

HOSE COUPLING

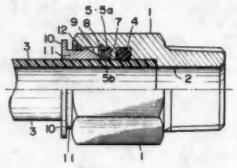
Hidesaburo Ishii, Tokyo, Japan, assignor to Chiyoda Tsusho K.K., Tokyo, Japan

Filed Mar. 12, 1984, Ser. No. 588,250

Claims priority, application Japan, Mar. 26, 1983, 58-043914[U]

Int. Cl.[4] F16L *33/22*

U.S. Cl. 285—239 **3 Claims**



1. A hose coupling comprising:

(a) a coupling body having a fluid passageway formed therethrough, said fluid passageway having a first end into which a hose is introduced during use of the coupling and a second end opposite to the first end, said fluid passageway:

(i) having a circular cross-section throughout its length;

(ii) having a first diameter from its second end to a first annular shoulder which, during use of the coupling, abuts the end of the hose to define the axial position of the hose in said fluid passageway;

(iii) having a second diameter, larger than the first diameter, from said first annular shoulder to a second annular shoulder; and

(iv) having a third diameter, larger than the second diameter, from said second annular shoulder to the first end of said fluid passageway;

(b) an O-ring fitted in a first annular groove in the surface of said fluid passageway between said first and second annular shoulder, said O-ring being sized and shaped so that, during use of the coupling, it makes sealing contact with said coupling body and with the exterior surface of the hose;

(c) a radially expandable holding ring fitted in said fluid passageway in abutment with said second annular shoulder, said holding ring:

(i) having a radial gap therethrough which permits it to flx radially inwardly or radially outwardly;

(ii) having a first radial surface which abuts said second annular shoulder;

(iii) having a second radial surface which is narrower than said first radial surface;

(iv) having a tapered annular internal camming surface extending from the inner edge of said first radial surface to the inner edge of said second radial surface;

(v) having a tapered annular external camming surface extending from the outer edge of said first radial surface to the outer edge of said second radial surface; and

(vi) having inherent resiliency which biases said holding ring towards a shape in which said radial gap has a predetermined circumferential width;

(d) a first expansion ring fitted in a second annular groove in the surface of said fluid passageway, said first expansion ring being sized, shaped, and positioned to bear against said tapered annular external camming surface on said holding ring, whereby if, during use of the coupling, an attempt is made to withdraw the hose without first expanding said holding ring, the movement of the hose causes said holding ring to move axially against said first expansion ring and the contact of said first expansion ring with said tapered annular external camming surface on said holding ring causes said holding ring to be forced radially inwardly, thereby digging into the exterior of the hose;

(e) an axially movable collar fitted in said fluid passageway, said collar:

(i) having a circular inner bore sized to allow the hose to pass therethrough during use of the coupling and to permit ready axial movement of said collar relative to the hose;

(ii) having a tapered annular external camming surface sized, shaped, and positioned to make camming contact with the tapered annular internal camming surface on said radially expandable holding ring;

(iii) projecting axially outwardly of the first end of said fluid passageway over the full extent of the axial travel of said axially movable collar; and

(iv) having a third annular shoulder facing toward the first end of said fluid passageway; and

(f) a second expansion ring fitted in a third annular groove in the surface of said fluid passageway, said second expansion ring being sized, shaped, and positioned to abut against said third annular shoulder on said axially movable collar and to thereby limit axial movement of said collar toward the first end of said fluid passageway.

4,564,222

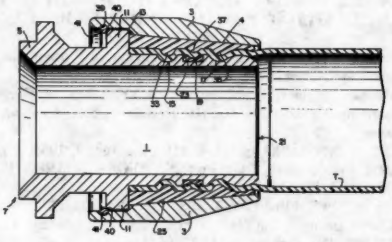
SEPARABLE COUPLING FOR THIN-WALLED FLEXIBLE HOSE

Ernest B. Loker, Edgewater, and Donald H. Turner, Annapolis, both of Md., assignors to Hydrasearch Co., Inc., Annapolis, Md.

Filed Aug. 27, 1984, Ser. No. 644,629

Int. Cl.[4] F16C *33/18*

U.S. Cl. 285—243 **19 Claims**



1. A coupling for use with flexible hose, tubing and the like comprising:

(a) a first inner member,

(b) a second intermediate member surrounding said first member,

(c) a third outer member surrounding said second member,

(d) said members each having a tubing receiving end,

(e) means for receiving and retaining tubing positioned between said first and second members, said receiving and retaining means comprising:

(1) at least one first substantially annular tubing groove on said first member,

(2) a substantially annular seal receiving groove on said first member between said tubing receiving end and said one tubing groove,

(3) a first substantially annular means on said second member cooperating with the tubing and said tubing groove for forcing the tubing into said tubing groove,

(4) sealing means in said seal receiving groove,

(5) a second substantially annular means in the form of a substantially annular element on said second member

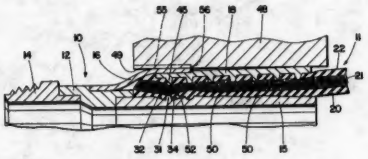
cooperating with said tubing and said sealing material for exerting a force into said sealing material.

4,564,223

HOSE COUPLING

George C. Burrington, Cleveland, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed May 2, 1983, Ser. No. 490,630
Int. Cl.[4] F16L *33/20*
U.S. Cl. 285—256 21 Claims



1. A permanently attachable hose coupling for high pressure, reinforced hose having a non-skived cover and core tube, comprising

a body member adapted for connection to a fluid system, said body member having a passage therein for flow of hydraulic fluid,

a nipple affixed on said body member, said nipple being of generally tubular configuration having a bore therein in fluid communication with said passage in said body member, said nipple extending outwardly from said body member and having an inner end and an outer free end,

an annular ridge on the periphery of said nipple, said ridge being spaced axially outwardly from said inner end of said nipple,

a first shell affixed on said body member, said first shell being a thin wall member having an inner section supported on said body member, an outer section of generally tubular configuration and a connecting section joining said inner and outer sections, said outer shell section surrounding said inner end of said nipple and said annular ridge thereon,

a second shell affixed to and supported by said first shell, said second shell being of generally tubular configuration and surrounding said nipple to form an annular space therebetween, said second shell having alternate grooves and projections on the inner periphery thereof forming teeth for gripping hose inserted in said annular space, said teeth being of a radial dimension to substantially freely receive said reinforced hose in said annular space, said second shell being partly received in said first shell to form an overlapping shell band, said shell band being of less axial extent than said second shell, said second shell extending axially outwardly of said first shell and having said projections therein axially outwardly of said first shell, and at least one of said projections being axially disposed in said shell band.

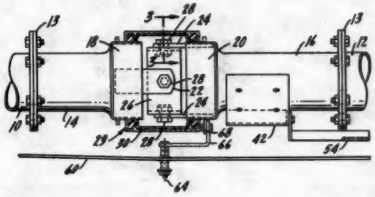
4,564,224

COUPLING DEVICE

Thomas J. Korus, Lindsay, Nebr., assignor to Lindsay Manufacturing Company, Lindsay, Nebr.

Filed Nov. 5, 1982, Ser. No. 439,346
Int. Cl.[4] F16L *27/00*
U.S. Cl. 285—272 8 Claims

1. In a pipe joint, two generally axially aligned pipes terminating in planar ends which are in substantial spaced relation to each other, a gimbal ring between the pipe ends and of an outside diameter on the order of and no greater than the outside diameter of the pipe ends and of an axial extent such that it does not axially overlap the pipe ends, two pairs of coupler bars, 180° apart having inner and outer ends, and means connecting one pair at their outer ends to one of the pipe ends and the other pair at their outer ends to the other pipe end and means pivotally connecting said bars at their inner ends to the gimbal ring, one pair being spaced about 90° from the other



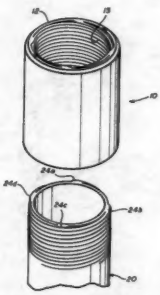
such that their pivot axes are generally perpendicular to each other, and a sealing sleeve in sealing engagement with said pipe ends and surrounding the ends of both pipes, the gimbal ring, and the coupler bars.

4,564,225

MULTIPLE LEAD THREADING

Vernon W. Taylor, 3923 Pleasant Valley, Missouri City, Tex. 77459

Filed Oct. 27, 1983, Ser. No. 545,821
Int. Cl.[4] F16L *25/00*
U.S. Cl. 285—333 1 Claim



1. In a coupling system for use in a drilling operation, the combination of:

radially tapered, axially bored, interiorly threaded, collar means, said collar means' threads including plural leads from each of said collar means' opposite ends to approximately the axial center of said collar means; and

a pair of tubular members, each having radially tapered, exteriorly threaded, ends, said threaded ends each having plural leads, said tubular members being adapted to be threadedly engaged with said collar means.

4,564,226

SYSTEM AND METHOD FOR INCREASING WALL THICKNESS ON END OF PIPE ON WHICH THREAD IS TO BE FABRICATED

Alfred E. Doherty, Jr., Fort Worth, Tex., assignor to Explosive Research Ltd., Fort Worth, Tex.

Filed Nov. 2, 1981, Ser. No. 317,330
Int. Cl.[4] F16L *25/00*
U.S. Cl. 285—334 14 Claims

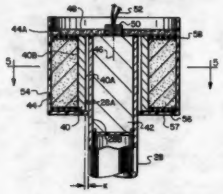
1. A well pipe comprising:

a tubular metal body having an axial flow passage for conveying fluids;

a metal sleeve coaxially disposed around an end portion of

the tubular body having its inner surface metallurgically bonded to the outer surface of the tubular end portion by a high-energy impact of the sleeve against the tubular body; and

a thread machined into the metallurgically bonded sleeve in



first and second paths, each extending substantially parallel to the axis of the tubular member at first and second diameters, respectively, the thread extending along the first path being machined within the tubular member, and the thread extending along the second path being machined within the sleeve.

4,564,227

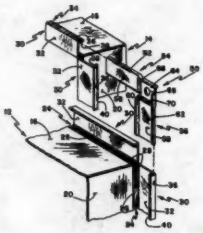
FLANGED DUCT JOINT UTILIZING SNAP-IN CORNER PIECES

James W. Murck, Rte. 2, Maple Lake, Minn. 55358

Filed Jan. 26, 1984, Ser. No. 574,044

Int. Cl.[4] F16L *23/00*

U.S. Cl. 285—364 **16 Claims**



1. A corner piece for joining two rectangular sheet metal duct sections together comprising a single first leg and a single second leg, said legs extending at right angles to each other and said first leg being offset from said second leg so that said first leg engages a flange on one of said two duct sections and said second leg engages a flange on the other of said two duct sections, and means extending only between the adjacent ends of said legs for maintaining said legs in their offset and angled relation.

4,564,228

APPARATUS FOR MAKING TENSION-PROOF JOINT FOR ENDLESS-FIBER THREADS

Karl-Heinz Kohlen, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

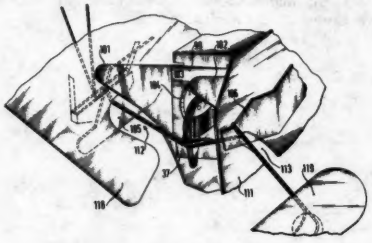
Filed Sep. 23, 1983, Ser. No. 535,368

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1982, 3235135

Int. Cl.[4] B65H *69/00*

U.S. Cl. 289—2 **17 Claims**

1. Apparatus for forming tension-proof joints in endless threads pointing in different directions, comprising a program control device for coordinating operation of the apparatus, a device connected to said program control device for finding, fetching and holding the threads pointing in different directions and for forming a common thread end with the ends of two threads lying adjacent each other in lengthwise direction, a joining device having a tying bill connected to said program control device for twisting the common thread ends of the threads into thread loops, a thread clamp of said tying bill for holding the common thread ends at least during rotation of said



tying bill, a device connected to said program control device for placing the common thread ends behind said rotatable tying bill for twisting, and a device connected to said program control device for pulling the thread loops in the common thread ends off said tying bill.

4,564,229

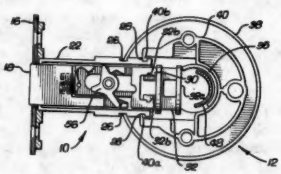
LATCH ASSEMBLY HAVING SELECTABLE BACKSET DISTANCE

Richard O. Mullich, Burbank, and Anthony J. Rotondi, Whittier, both of Calif., assignors to TRE Corporation, Los Angeles, Calif.

Filed Apr. 18, 1983, Ser. No. 485,180

Int. Cl.[4] E05C *1/12;* **E05B** *9/02*

U.S. Cl. 292—169.13 **6 Claims**



1. A latch mechanism having a selectable backset distance, comprising:

a hollow latch case assembly;

a face plate attached to the latch case assembly;

a latch bolt slidably carried within the latch case assembly and movable between an extended and retracted position;

a latch slide slidably carried within the latch case assembly and extending from the end of the latch case assembly opposite the latch bolt, one end of the latch slide having a pressing face for receiving a pushing force in the direction of latch bolt extension;

a coupling mechanism coupling the latch bolt to the latch slide so that movement of the latch slide will retract the latch bolt;

a one piece removable latch slide extension having two ends, one end attached to said one end of the latch slide, the other end of the extension having a pressing face for receiving a pushing force in the direction of said latch bolt extended position; and

an actuator assembly including a spindle extending along an axis perpendicular to the direction of travel of the latch slide and an actuator housing, the spindle having a face for pressing against the other end of the latch slide extension thereby to apply said pushing force, the latch case assembly and the actuator housing including engaging means

for mutually engaging said latch case assembly and said housing at two alternative locations, wherein in a first configuration the actuator housing is connected at the first location to the latch case assembly so that the spindle is positioned adjacent the latch slide extension and in a second configuration the latch slide extension is removed and the actuator housing is connected at the second location to the latch case assembly so that the spindle is positioned adjacent the end of the latch slide, said configurations defining first and second backset distances from the face plate to the spindle of the actuator assembly, wherein rotation of the spindle causes said spindle face to push against the pressing face of the latch slide extension thereby to cause retraction of the latch bolt.

4,564,230

RESTRAINT APPARATUS FOR CARGO BOX DOORS

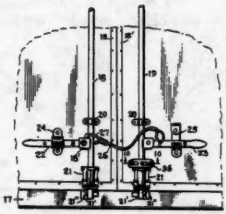
Edward A. Haist, Maitland, Ontario, Canada

Filed Oct. 3, 1983, Ser. No. 538,344

Claims priority, application Canada, Oct. 5, 1982, 412826

Int. Cl.[4] E05C *9/08*

U.S. Cl. 292—218 **6 Claims**



1. In a cargo box comprising an end frame having left and right vertical side members and top and bottom horizontal members, said members defining an end opening of said box, a pair of doors having vertical side edges pivotally mounted on said side members and having opposite vertical edges meeting centrally of said opening when said doors are closed on said opening, a vertical latch-actuating bar carried by each said door adjacent said opposite vertical edge, each said bar having latch means fixed on its ends, latch keeper structure carried on said top and bottom frame members engageable by said latch means, said bars having brackets and lever arms connectable with each bracket for effecting opening and closing rotations of respective bars by turning a lever arm in the horizontal plane, the improvement wherein a restraint link is connected by one end with the bar of a first door of said pair and by its other end with the lever arm of the second door and has a length such that when the lever arm of the second door is turned to release respective latches for opening said second door the opening door, swing is limited by said link to a predetermined minor amount, and wherein the second lever arm is rotatable relative to its associated bracket in a vertical plane and is disconnectable from the bracket only when the lever arm is substantially vertical.

4,564,231

APPARATUS FOR THE LIFTING OF COILS, SPOOLS AND THE LIKE

Joachim Burkert, Neustadt, Fed. Rep. of Germany, assignor to Industriewerk Nachf. Seifert & Co. KG, Neustadt, Fed. Rep. of Germany

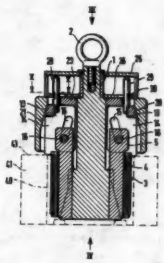
Filed Jun. 14, 1984, Ser. No. 620,404

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1983, 3323239

Int. Cl.[4] B66C *1/54*

U.S. Cl. 294—96 **6 Claims**

1. Apparatus for the lifting of coils, spools and the like of the type which has an interior opening, the apparatus comprising a carrying shaft, guide track means arranged circumferentially about said carrying shaft, clamping segments disposed on said guide track means for movement in a radial and a longitudinal direction, said clamping segments and said guide track means having a cooperable aperture and a cross shaft accommodated in the aperture such that the cross shaft moves in the aperture during relative movement between the guide track means and the clamping segments, said carrying shaft having an outer conical surface, said clamping segments having an inner conical surface engaging said outer conical surface on said carrying shaft, and a locking means operable to lock said clamping segments into a radially inwardly disposed position such that



when the locking means is released, said clamping segments are extended radially outwardly relative to said carrying shaft as said inner conical surface of said carrying segments slide on said outer conical surface of said carrying shaft to thereby engage said interior opening, said clamping segments having an upper head section, a bell-shaped means on the carrying shaft and disposed about said head section, said bell-shaped means having an inner conical surface engaging an outer conical surface on said head section, said outer conical surface on said head section sliding on said inner conical surface on said bell-shaped means when said clamping segments are moved relative to said carrying shaft.

4,564,232

AUTOMOBILE DOOR

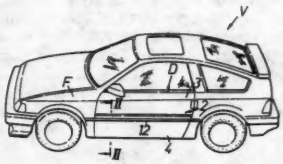
Yoshitsugu Fujimori, Saitama; Ryouhei Adachi, Tokyo; Hiroo Ebisawa, Saitama; Yukio Kurachi, Saitama, and Masami Koike, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1984, Ser. No. 585,986

Claims priority, application Japan, Mar. 4, 1983, 58-35627

Int. Cl.[4] B62D *27/00*

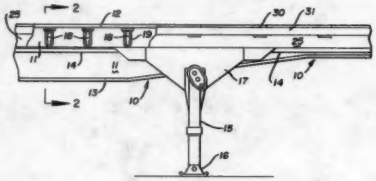
U.S. Cl. 296—146 **4 Claims**



1. An automobile door with an inner plate and an outer plate including an upper panel and lower panel with different thermal expansion characteristics, comprising, a plurality of holes including a reference hole formed along the longitudinal axis of the automobile through the upper and lower panels of the outer plate along the lower edge portion of the upper panel and along the upper edge portion of the lower panel, fastening means fitted through said holes attaching the lower panel to the upper panel, said reference hole being approximately equal

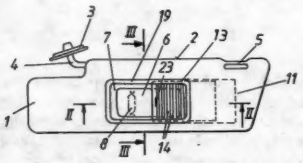
in size to the outer diameter of one of said fastening means, the other said holes being formed so as to allow different amounts of longitudinal expansion between the upper and lower panels, and a lip formed on the lower edge of the lower panel engaged with the lower edge of the inner plate.

4,564,233
FLAT BED TRAILER STRUCTURE
Howard Booher, P.O. Box 277, Randolph, Ohio 44265
Filed Mar. 21, 1984, Ser. No. 591,928
Int. Cl.[4] B62D *27/06*
U.S. Cl. 296—182 **9 Claims**



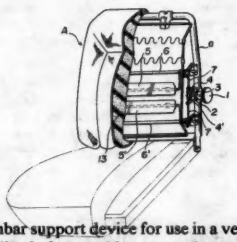
1. A flat bed trailer structure consisting of a pair of horizontally spaced, longitudinally extending, integral I-beams, each having vertically spaced upper and lower horizontally disposed portions and an intermediate vertically disposed web portion, a plurality of longitudinally spaced, transversely positioned tubular frame members having spaced vertically disposed side walls positioned in transversely registering apertures in said web portion of said I-beams contiguous with said upper horizontally disposed portions of said I-beams, each of said registering apertures defined by spaced vertically positioned sides, longitudinally extending flooring members positioned on the transversely positioned tubular frame members in side by side relation with one another and with said upper horizontally disposed portions of said I-beams, outside rails positioned on the opposite ends of said transversely positioned tubular frame members and welded thereto, said spaced vertically disposed side walls of said tubular frame members welded to said web portions of said I-beams on opposite sides of said apertures therein to form spaced double welds between said tubular frame members and said I-beams, said flooring members and the outside rails welded to said tubu'ar frame members.

4,564,234
COVER FOR MIRROR FOR SUN VISOR, PARTICULARLY FOR AUTOMOBILES
Klaus-Peter Kaiser, Wermelskirchen, and Lothar Viertel, Saarlouis, both of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany
Continuation of Ser. No. 509,313, Jun. 30, 1983, abandoned. This application Jan. 24, 1985, Ser. No. 694,438
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1982, 82206295[U]
Int. Cl.[4] B60J *3/00*
U.S. Cl. 296—97 H **11 Claims**



1. A sun visor for automobile vehicles, comprising:
a sun visor body having first and second opposed major surfaces spaced apart by a distance which is substantially smaller in dimension than the dimensions of said major surfaces, said distance defining the thickness of said visor body;
a mirror housed in said visor body and being viewable through an opening formed in said visor body;
a cover housed in said visor body and being movable between a first position wherein it covers said mirror so that said mirror cannot be viewed through said opening and a second position wherein it is withdrawn from said mirror so that said mirror can be viewed through said opening;
a non-exposed chamber located within said visor body adjacent said mirror for accommodating said cover in said chamber when said cover is in said second position; and
means for guiding said cover for movement between said first and second positions; said means, said cover and said chamber cooperating to cause said cover to assume a u-shaped configuration, as viewed along a cross section of said visor body which is taken along the thickness direction of said visor body, in said chamber when said cover is in said second position; said cover including a fixed end and a movable end, said fixed end being stationarily connected to a portion of said chamber adjacent said mirror, said movable end being manually movable past said mirror.

4,564,235
LUMBAR SUPPORT DEVICE
Susumu Hatsutta, and Takayuki Kosaka, both of Akishima, Japan, assignors to Tachikawa Spring Co., Ltd., Tokyo, Japan
Filed Nov. 9, 1984, Ser. No. 670,367
Int. Cl.[4] A47C *3/00*
U.S. Cl. 297—284 **4 Claims**



1. A lumbar support device for use in a vehicle seat, comprising a handle shaft rotatably mounted to a back frame of said vehicle seat, a polyhedral cam fixedly secured to said handle shaft, upper and lower arms engageable with the upper and lower surfaces of said polyhedral cam, and a pair of upper and lower lumbar plates respectively connected via connecting members to said upper and lower arms and movable longitudinally by means of the rotational displacements of said upper and lower arms, characterized in that said upper and lower lumbar plates can be moved independently of each other through said upper and lower arms by rotating said polyhedral cam.

4,564,236

SEAT, PARTICULARLY A POWER VEHICLE SEAT

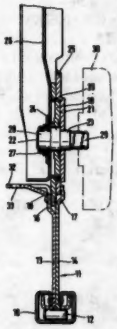
Bernd Klüting, Radevormwald, and Klaus D. Bertram, Remscheid, both of Fed. Rep. of Germany, assignors to Keiper Recaro GmbH & Co., Remschied, Fed. Rep. of Germany

Filed Dec. 16, 1983, Ser. No. 562,402

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1982, 3246564

Int. Cl.[4] A47C *1/02*

U.S. Cl. 297—344 6 Claims



1. A seat, particularly a power vehicle seat, comprising a seat part; a back part; two seat rail elements arranged at both longitudinal sides and connectable with a vehicle bottom, each of said seat rail elements including an elongated guide rail and a movable rail displaceable along said guide rail, said movable rail including a carrying member and a holding member connected with one another so that said movable rail is T-shaped; means for fixedly connecting said carrying member with said holding member; a hinge pivotally connecting said back part with said seat part, said hinge having a pivot axle and two axially adjacent hinge parts which are arranged on said pivot axle pivotally relative to one another and include position adjusting and fixing means, one of said hinge parts being fixedly connected with said carrying member of said T-shaped movable rails, whereas the other of said hinge parts is connected with said back part and at least partially surrounded and held by said holding member of said T-shaped movable rail so that said movable T-shaped rail axially assembles and holds together said hinge parts of said hinge.

4,564,237

SEAT ARRANGEMENT

Friedrich M. Steifensand, Sperberslohler Strasse 124, D-8501 Wendelstein, Fed. Rep. of Germany

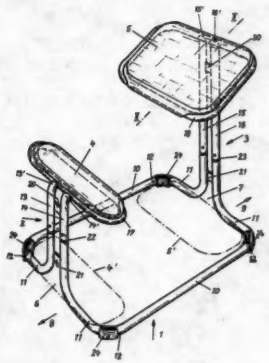
Continuation of Ser. No. 332,619, Dec. 21, 1981. This application Apr. 24, 1985, Ser. No. 725,502

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1981, 3129647

Int. Cl.[4] A47C *7/50*

U.S. Cl. 297—423 8 Claims

1. A seat arrangement comprising: a common frame including a horizontal base having a pair of spaced-apart ends with longitudinal side members extending therebetween, a first vertical support strut extending upwardly from a center of one end of the pair of spaced-apart ends and a second vertical support strut extending upwardly from the other end of said spaced-apart ends, said first vertical support strut being connected to an edge of a first support frame with the first support frame being a cantilever spaced above the base and extending inwardly from the first strut towards the second strut with a projection of the first support frame being within the confines of the base, said second vertical support strut being connected to an edge of a second support frame with the second support frame being a cantilever spaced above the base and extending inwardly from the second strut towards the first strut with a projection of the second support frame being within the confines of the base; a first unitary support surface for supporting the buttocks of a person seated on said seating arrangement, said first unitary support surface being mounted on said first support frame inward of the first vertical support strut; and a



second unitary support surface for supporting the knees and shins of said person, said second unitary support surface being mounted on said second support frame inward of said second vertical support strut so that both the first unitary support surface and the second unitary support surface are within the confines of the base.

4,564,238

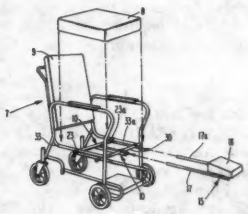
LEG-RESTS FOR MODIFIED WHEEL-CHAIR

George H. Wolpert, Jr., Colombia, Pa., assignor to Spectro Industries, Inc., Jenkintown, Pa.

Filed Oct. 3, 1983, Ser. No. 538,209

Int. Cl.[4] A47C *7/50*

U.S. Cl. 297—430 1 Claim



1. A removable leg rest receiving assembly for use in connection with a wheel chair having a back frame connected to a seat frame wherein said assembly is supported by said seat frame and converts said wheel chair into one which includes leg/foot supports comprising:

a plurality of spaced-apart, parallel tubes with at least one said tube having an orifice therethrough oriented in a horizontal plane and having openings at the front ends thereof and being rigidly braced by transversely disposed members;

grasping means fixed to said brace members for removably attaching said assembly to the seat frame;

at least one coaxially-positioned inner tube telescopingly received in a parallel tube and having a plurality of orifices therethrough in sequential alignment with said paral-

lel tube orifice as said inner tube is longitudinally extended;

at least one leg-rest attached to the distal end of said inner tube and rotatable from an inverted, storage position to an upright, cushion position;

a spring-biased bolt in said housing extending through said parallel tube orifice and said inner tube orifice.

4,564,239

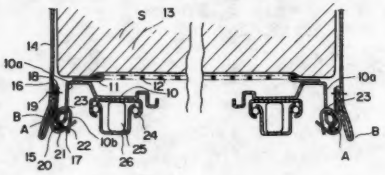
VEHICLE SEAT CUSHION

Hisayoshi Akimoto, Atsugi, Japan, assignor to Ikeda Bussan Co., Ltd., Yokohama, Japan

Filed Nov. 8, 1982, Ser. No. 439,749

Int. Cl.⁴ A47C *31/02*

U.S. Cl. 297—452 **10 Claims**



1. A vehicle seat cushion including a frame having an outer peripheral portion, a cushioning material disposed over said frame and a surface material covering throughout said cushioning material with each end portion of said surface material being fixed to said frame, wherein at each end portion of said surface material there is provided a connection piece with a cover portion, said connection piece at a position opposed to the outer periphery of said frame with said connection piece connected to the outer peripheral portion of said frame, and said cover portion of said surface material extended to a position lower than said connection piece to form a depending cover surface for covering and concealing the connection of said connection piece to said frame; said outer peripheral portion of said frame being bent downwards to form a bent piece, a tubular turnup portion at the lower end of said bent piece, holes in the upper side of said turnup portion, ring-like clips adapted to surround said turnup portion pass through said holes, and means associated with said frame for securing said connection piece at opposite ends of said frame with said ring-like clips being hidden from view by said turnup portion.

4,564,240

LOUNGER OR RECLINING CHAIR MADE FROM A FLOATABLE PLASTIC BODY

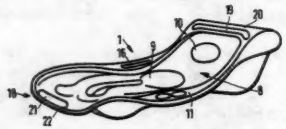
Gerd Thieme, Auf der Wildbahn 2, 5060 Bergisch Gladbach, Fed. Rep. of Germany

Filed Oct. 18, 1983, Ser. No. 543,514

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1982, 8229761[U]

Int. Cl.⁴ A47C *7/02*

U.S. Cl. 297—457 **8 Claims**



1. A lounger or reclining chair comprising a rigid plastic body with a continuous supporting surface, said plastic body being floatable and means defining at least one cavity in said plastic body for making said lounger bouyant, the top surface of the plastic body defining a supporting surface, and having first a depression which is adapted to the shape of a human body and additional wider depressions than said first depression for the buttocks and head, said reclining chair including two lateral armrests, each armrest having two lateral edges, each lateral edge of each said armrest depending downwardly to form a float spaced from the central portion of said plastic body in the manner of lateral outriggers to produce floating stability.

4,564,241

POWER SUPPLY ARRANGEMENT FOR PULLED MINING MACHINES

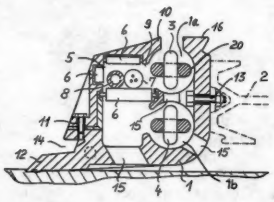
Joachim Holz, Dortmund; Wolfgang Meier, Oer-Erkenschwick; Kurt Ogorek, Oberhausen; Heinrich Goris, Hamminkeln, and Karl H. Schwarting, Voerde, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 21, 1983, Ser. No. 506,348

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1982, 3224591

Int. Cl.⁴ E21C *29/14*; H02G *11/00*

U.S. Cl. 299—43 **15 Claims**



1. A device for extending flexible supply lines for mining machines which are guided on a conveyor structure moved back and forth along a longwall and over a mine floor by means of a traction element including a load strand and a return strand extending within an enclosed space, comprising a housing secured to the conveyor and enclosing a load strand channel, a return strand channel, and a cable channel alongside and communicating with said load strand channel, with the flexible supply line being stored at the ends of the longwall and towed along by a mining machine through said cable channel, said cable channel having four sides, one of which is open in a continuous slot to said load strand channel, said housing being secured to the conveyor and open at one side, and a plurality of idle rollers mounted in said housing in said cable channel, said supply lines being supported on some of said idle rollers, said idle rollers extending over three remaining sides of said cable channel and said cable channel being upwardly closed.

4,564,242

WHEEL HUB ASSEMBLY

Werner Krude, Siegburg, and Alfons Jordan, Hennef, both of Fed. Rep. of Germany, assignors to Uni-Cardan Aktiengesellschaft, Siegburg, Fed. Rep. of Germany

Filed Oct. 26, 1983, Ser. No. 545,749

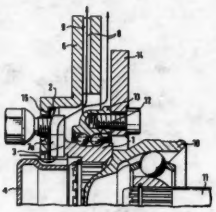
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1982, 3239802

Int. Cl.⁴ F16D *65/78, 65/84, 65/847*

U.S. Cl. 301—6 CF **4 Claims**

1. A wheel hub assembly having a central axis and including a wheel hub, an integrated rotary constant velocity joint, and a flanged-on brake disc each encircling the central axis, comprising a wheel carrier, a wheel bearing encircling the central axis and comprising a radially outer bearing ring connected to said wheel carrier and a radially inner bearing ring, wherein the improvement comprises:

(a) said inner bearing ring having a first end and a second end spaced apart in the direction of the central axis, a flange-like extension formed on and extending radially outwardly from the first end of said inner bearing ring, said flange-like extension having a radially inner circumferential edge and a radially outer circumferential edge and uniformly circumferentially spaced radially extending through-slots formed therein and extending from the inner circumferential edge to the outer circumferential edge of said flange-like extension, and said brake disc being internally ventilated and mounted on the radially extending side of said flange-like extension most remote from said inner bearing ring;



(b) said through-slots in said flange-like extension being covered by said brake disc and the combination of said through-slots and said brake disc defining cooling channels extending radially outwardly from the inner circumferential edge of said flange-like extension; and

(c) said inner bearing ring having a central bore therein located radially inwardly of said flange-like extension, a cover plate member inserted into the central bore of said inner bearing ring, said cover plate member has radially inwardly directed beads formed therein providing recesses aligned opposite the radially inner ends of the cooling channels located between said brake disc and said flange-like extension so that coolant can flow through the recesses formed by said beads into the cooling channels.

4,564,243

HUB BEARING UNIT

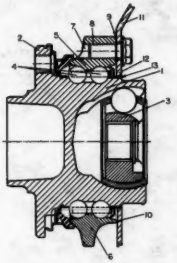
Sture L. Asberg, Gothenburg, Sweden, assignor to SKF Nova AB, Gothenburg, Sweden

Filed Feb. 28, 1983, Ser. No. 470,220

Claims priority, application Sweden, Mar. 29, 1982, 8201969

Int. Cl.⁴ B60B *37/00;* **B62D** *7/06;* **F16C** *33/00*

U.S. Cl. 301—124 R **2 Claims**



1. A hub unit for vehicles comprising an inner race ring (1) having means for mounting to a wheel of a vehicle, an outer race ring (5) having a radially directed flange (6) formed integrally therewith for mounting the hub unit to the vehicle and two axially spaced rows of rolling elements (4) mounted in the annular space between the raceways of the inner and outer race rings, said flange (6) being disposed in a plane through the axial center of the outer race ring and symmetrical relative to the rows of rolling elements a plurality of circumferentially spaced lugs (8) having axially extending through holes (7) for fasteners to secure the hub unit to a steering knuckle housing (11), one axial end face of the lugs aligned radially with an axial end face of the outer race ring, said housing having a radial wall portion contacting an outer axial end face of the outer ring and closely circumscribing the inner race ring to form with said inner ring a labyrinth seal.

4,564,244

PRESSURE CONTROL DEVICE

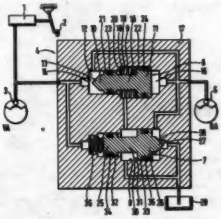
Hans-Dieter Reinartz, Frankfurt am Main, and Helmut Steffes, Eschborn, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 16, 1983, Ser. No. 562,197

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1983, 3301901

Int. Cl.⁴ B60T *13/00*

U.S. Cl. 303—6 C **13 Claims**



1. A pressure control device for insertion into a connection between a wheel brake at the front axle and at least one wheel brake at the rear axle of an automotive vehicle and which sets a hydraulic pressure in the wheel brake of the rear axle as a function of the pressure in the wheel brake of the front axle, wherein two valve pistons which are connected in parallel are arranged in cylinder bores and are displaceable by the pressure of the wheel brake of the front axle in opposition to a control force and wherein after a proportional pressure rise in the wheel brakes upon attainment of a definable change-over pressure a pressure is set in the wheel brake of the rear axle which is reduced relative to the pressure in the wheel brake of the front axle, wherein the valve pistons (6, 7) are provided as stepped pistons guided in stepped bores (8, 9) wherein the effective surfaces of the smaller-diameter pistons steps (10, 25) are exposed to the pressure in the wheel brake (3) of the front axle while the effective surfaces of the larger-diameter piston steps (11, 26) are exposed to the pressure in the wheel brake (5) of the rear axle and wherein a shaped closure member (13) is provided at the smaller piston step (10) of the first piston (6) for the control of a first valve passage between the front and rear wheel brakes (3, 5), and a closure member (27) is provided at the larger piston step (26) of the second piston (7) for the control of a second valve passage between the wheel brake (5) of the rear axle and an unpressurized supply reservoir (29).

4,564,245

PARKING BRAKE CONTROL APPARATUS

Dario Barberis, Turin, Italy, assignor to WABCO Westinghouse Compagnia Freni S.p.A., Turin, Italy

Filed Jun. 22, 1984, Ser. No. 623,794

Claims priority, application Italy, Jun. 22, 1983, 67693 A/83

Int. Cl.⁴ B60T *7/00, 13/70, 15/14, 13/22*

U.S. Cl. 303—15 **5 Claims**

1. An electrofluidic parking brake control apparatus on a vehicle equipped with an electrofluidic brake system, such

electrofluidic brake system being responsive to an electrical signal and to a fluid pressure signal, said parking brake control apparatus comprising:

(a) at least one parking brake mounted on such vehicle;

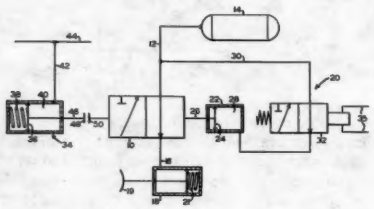
(b) a first source of pressurized fluid connected to supply a first fluid pressure to operate said parking brake on such vehicle;

(c) a pressurized fluid operated first cylinder connected intermediate said first source and said parking brake, said first cylinder being responsive to said first fluid pressure to release said parking brake and being responsive to apply said parking brake when said first fluid pressure is vented from said first cylinder;

(d) a two-position directional valve connected intermediate said first source and said first cylinder, said directional valve being operable in a first position to establish a first fluid communication between said first source and said first cylinder thereby releasing said parking brake and said directional valve being operable in a second position to close said first fluid communication and venting said first fluid pressure from said first cylinder thereby applying said parking brake;

(e) a second source of pressurized fluid connected to supply a second fluid pressure to maintain said directional valve in said first position;

(f) a pressurized fluid operated second cylinder mechanically connected to said directional valve and to said second source, said second cylinder being responsive to said



second fluid pressure to maintain said directional valve in said first position and being responsive to allow shifting of said directional valve to said second position when said second fluid pressure is vented from said second cylinder;

(g) a two-position directional electrovalve means responding to an electrical control signal and connected intermediate said second source and said second cylinder, said electrovalve being operable in a first position to establish a second fluid communication between said second source and said second cylinder when said signal is at least a predetermined minimum value and said electrovalve being operable in a second position to close said second fluid communication between said second source and said second cylinder and venting said second fluid pressure from said second cylinder thereby allowing said directional valve to shift to said second position when said electrical signal is below said predetermined minimum value;

(h) a third source of pressurized fluid connected to supply a third fluid pressure to shift said directional valve to said second position; and

(i) a pressurized fluid operated third cylinder connected intermediate said third source and said directional valve, said third cylinder being responsive to said third fluid pressure to allow said directional valve to remain in said first position and being responsive to urge said directional valve to said second position when both said third fluid pressure is vented from said third cylinder thereby shifting said directional valve to said second position and said electrical signal is below said predetermined minimum.

4,564,246

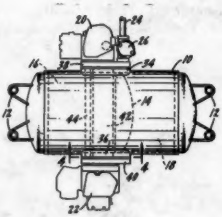
COMBINED RESERVOIR AND PIPE HANGER FOR RAILROAD BRAKES

Henry R. Billeter, deceased, late of Marco Island, Fla. (by Lucille Billeter, administratrix), assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Nov. 14, 1983, Ser. No. 551,402

Int. Cl.[4] B60T *11/34*

U.S. Cl. 303—85 **5 Claims**



1. For use in a railroad car air brake system, a combined reservoir tank and pipe bracket including a tank, a partition within said tank dividing it into emergency and service portions, an emergency valve mounting saddle attached to the exterior of said tank and a connection between said emergency saddle and the emergency portion of said tank, a service valve mounting saddle attached to the exterior of said tank, spaced from said emergency saddle and a connection between said service saddle and the service portion of said tank, a tube extending within said tank and connecting said emergency saddle and said service saddle and functioning as a pipe bracket quick action chamber, and a plurality of conduits connecting said saddles and extending within said tanks in spaced relation to said tube, said conduits functioning to provide connections between said saddles for the emergency reservoir, brake pipe air and brake cylinder air.

4,564,247

ROLLER-BEARING-MOUNTED TELESCOPIC TRACK FOR DRAWERS OR THE LIKE

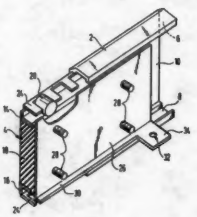
Franz-Josef Knoop, Sonnenhang 7, D-4793 Büren-Steinhausen, Fed. Rep. of Germany

Filed Dec. 7, 1983, Ser. No. 558,918

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1982, 3245209

Int. Cl.[4] A47B *88/10*

U.S. Cl. 308—3.8 **7 Claims**



1. A telescopic track for drawers or the like of the type including at least one outer track member including means defining two confronting rolling paths, at least one inner track member including means defining two rolling paths respectively confronting the rolling paths on said outer track; and bearing means interposed between the respective pairs of confronting rolling paths, characterized in that at least one of said track members is a composite structure including a central

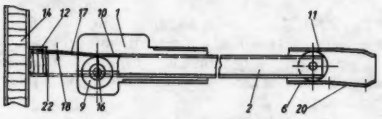
main body portion formed of an elastomeric material and strips of rigid non-elastomeric material bonded to the upper and lower edge surfaces of said elastomeric main body portion to define said rolling paths thereon so that said elastomeric main body portion dampens and absorbs the running noises and vibrations generated along said paths during operation of the track; a plate of rigid non-elastomeric material is bonded to a side surface of said elastomeric main body portion for fastening the track to a drawer or cabinet; and said plate is isolated from said strips by said elastomeric main body portion so that the running noises and vibrations generated on said paths is not transmitted to the drawer or cabinet.

4,564,248

PULL-OUT GUIDE FOR DRAWERS

Alfred Grass, Konsumstrasse 20, Höchst, Austria

Filed Mar. 13, 1984, Ser. No. 589,125
Claims priority, application Austria, Mar. 25, 1983, 1057/83
Int. Cl.[4] F16C *29/12*; A47B *88/00*
U.S. Cl. 308—3.8 **2 Claims**



1. A pull-out guide to be used in drawers and other similar objects comprising:

(a) a U-shaped guide rail attached to a side wall of the drawer;

(b) Z-shaped pull-out rail located within said U-shaped guide rail to move in a horizontal direction as the drawer is pulled out of and pushed into the furniture;

(c) a front roller rotatably mounted in a front area of said guide rail allowing the drawer to move in the horizontal direction;

(d) an upper guide leg paired with a lower guide leg fastened to the side wall of the drawer, said lower guide leg having a run-in slope in an area of said lower guide leg abutted by a run-in stop and this arrangement is used in moving said drawer;

(e) a rear roller rotatably fastened to a rear end area of said Z-shaped pull-out rail moving in the horizontal direction and guided by a rolling contact along one surface of said lower guide leg and one surface of said upper guide leg;

(f) an upper leg paired with a lower leg of said Z-shaped pull-out rail, said upper leg serving as a rolling surface of said front roller and having in a front end area a run-in slope parallel to said run-in slope of said U-shaped guide rail, and said run-in slope of said upper leg is disposed a short distance from an end of said pull-out rail to enable said front roller to slide into said drawer by passing a bending edge on said upper leg of said Z-shaped pull-out rail, while said rear roller is located along a horizontal area of said lower leg of said guide rail.

4,564,249

MINIATURE WASHING MACHINE BOX

Duane D. Logsdon, P.O. Box 186, Stanton, Calif. 90680

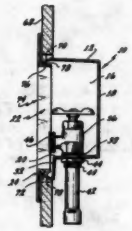
Filed Jan. 6, 1984, Ser. No. 568,892
Int. Cl.[4] F16L *5/00*
U.S. Cl. 312—229 **1 Claim**

1. A washing machine outlet box capable of fitting within a wall and attaching to support members located in said wall, said washing machine outlet box being an integrally formed water impervious plastic cabinet having a top, a back, sides, a front opening and a bottom with said bottom including a bottom drain opening, the improvement which comprises:

said top of said cabinet having a front edge, said front edge of said top extending forwardly and downwardly over said front opening so as to form an acute angle to the plane of said front opening of said cabinet,

the forwardmost portion of said bottom extending forwardly and upwardly over said front opening so as to form a front edge of said bottom, said front edge of said bottom sloping downwardly towards said drain opening and forming an acute angle to the plane of said front opening of said cabinet, said bottom including a vertically extending wall at the rear of said forwardmost portion which defines a channel with said forwardmost portion which slopes downwardly toward said drain opening,

a face plate shaped as a frame whose outside periphery is of a greater dimension than the outside periphery of the front opening of said cabinet and including an opening located



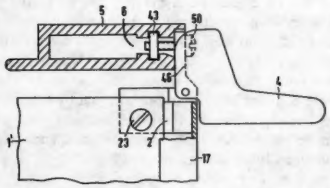
in said frame wherein the periphery of said opening is of a smaller dimension than the outside periphery of said front opening of said cabinet, said face plate including a flange located perpendicularly to said frame and extending around said opening in said frame, said flange sized and shaped so as to extend inwardly into said front opening of said cabinet, said face plate fitting against said cabinet with said flange fitting into said front opening so as to position portions of said flange against said front edges of said top and said bottom, said portions of said flange which fit against said front edges of said top and said bottom including a plurality of longitudinally oriented ridges capable of frictionally engaging said front edges of said top and said bottom.

4,564,250

EJECTION AND GROUNDING SYSTEM FOR RACK-MOUNTED PLUG-IN MODULES

Klaus Klein, Rheinstetten, and Reinhard Schmitt, Hagenbach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 22, 1984, Ser. No. 623,277
Int. Cl.[4] H01R *4/66*
U.S. Cl. 339—14 R **2 Claims**



1. An ejection and grounding system for rack-mounted plug-in modules comprising:

a fixed and elongated frame element having an elongated recess that is open in front;

a groundable buss bar located in the recess;

an electrically conductive bracket adaped for physical and

electrical connection to a rack-mounted plug-in module, the bracket having an electrically conductive tang for electrical contact with the buss bar using electrically conductive hardware including a screw that is passed through a hole in the tang and threaded into a tapped hole in the buss bar; and

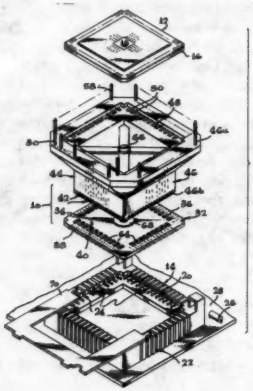
an angle lever pivotally secured to the bracket and rotatable parallel to the module, the lever having a cammed surface which rides on the frame element when the lever is urged against the frame to extract the module.

4,564,251

LEADLESS CHIP CARRIER ADAPTER

William D. Hansen, Bell Gardens, and Raymond F. Mix, Pomona, both of Calif., assignors to ITT Corporation, New York, N.Y.

Filed Dec. 13, 1984, Ser. No. 681,155
Int. Cl.[4] H01R *9/09*
U.S. Cl. 339—17 CF **7 Claims**



1. An adapter for making connection between the contact pads of a LCC (Leadless Chip Carrier) which has multiple pads spaced about its periphery, and the terminals of a LCC socket that normally receives an LCC and connects the pads of the LCC to a circuit on a printed circuit board or the like, while permitting monitoring of the interface between the LCC contact pads and the socket terminals by test instruments, comprising:

a base element which is shaped to fit into a LCC socket, said base element having multiple contact pads at substantially its periphery which form substantially the same contact footprint as the LCC, said contact pads having inner portions lying inward of said periphery;

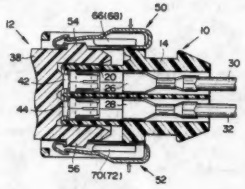
a test interfacer which includes a frame with a receiver for receiving a LCC and a multiplicity of leads, each lead having a lower end in electrical connection with the inner portions of said contact pads of the base element, a first upper portion that contacts the pads of the LCC held in the receiver, and a second upper portion that is accessible from outside the interfacer for connection to test instruments.

4,564,252

ELECTRICAL CONNECTOR ASSEMBLY

Shinichi Kato, Atsugi; Takeshi Tamura, Takasaki; Tsugio Ambo, Tokorozawa, and Katsuji Shimazawa, Tanashi, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama; Japan Electronic Control Systems Co., Ltd., Isesaki and Shinagawa Jidosha Densen Co., Ltd., Tokyo, all of, Japan

Filed Oct. 5, 1984, Ser. No. 658,277
Claims priority, application Japan, Oct. 7, 1983, 58-187854
Int. Cl.[4] H01R *13/639*
U.S. Cl. 339—91 R **11 Claims**



1. In an electrical connector assembly comprising first and second matable parts which are respectively provided with first and second groups of terminal elements which are sufficiently mated with one another upon final coupling of said first and second parts,

locking means for locking said first and second parts when they are finally coupled together, said locking means comprising:

a locking clip made of resilient metal detachably fixed to said first part, said clip including a first portion lockably fixed to said first part, a second portion having a locking opening formed therein and a third portion having a free end which is in contact with one of said portions such that said clip is in the form of a loop, said third portion being resiliently moved together with the free end thereof toward said first portion when pressed toward said first portion;

a projection formed on said second part, said projection being thrusted into said locking opening of said locking clip when said first and second parts are finally coupled; and

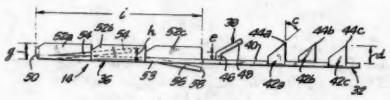
fulcrum means formed on said first part to support partially said third portion of said clip in such a manner that when said third portion is pressed toward said first portion, said second portion is raised away from said first portion thereby disengaging said locking opening of said second portion from said projection.

4,564,253

CRIMP-ON CONNECTOR FOR FLAT CABLE

William Y. Sinclair, Stockton, N.J., assignor to Aries Electronics, Inc., Frenchtown, N.J.

Filed Dec. 11, 1984, Ser. No. 680,544
Int. Cl.[4] H01R *4/24*
U.S. Cl. 339—97 C **19 Claims**



1. A crimp-on connector for a flat cable, said connector comprising opposed cable mounting and contact ends, said cable mounting end including an elongated generally planar support portion, a plurality of barbs extending generally perpendicular to said support portion and adjacent to the longitudinal axis thereof with alternate barbs being disposed on opposite sides of said longitudinal axis and a longitudinal alignment

lance extending from said support portion intermediate said barbs and said contact end, whereby said longitudinal alignment lance enables a precise longitudinal positioning of the connector relative to the cable and whereby the barbs are operative to pierce through and mount on the cable.

4,564,254

IDC LATCHING TERMINAL

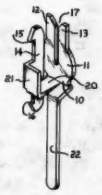
Wilhelmus B. T. van Alst, St. Oedenrode, Netherlands, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 6, 1983, Ser. No. 501,107

Claims priority, application United Kingdom, Jun. 10, 1982, 8216938

Int. Cl.[4] H01R *13/39*

U.S. Cl. 339—99 R **6 Claims**



1. An electrical connector assembly for terminating a flat cable having multiple insulated conductors separated by a web, the assembly comprising a plastic block member and a plastic upper housing member, the block member having a multiplicity of channels each retaining an electrical terminal having an insulation displacement contact at a first end and another electrical contact at a second end with a body portion separating the first and second ends, a shoulder and support member together forming an L-shaped member extending perpendicularly from the body portion and supporting a pair of latches spaced apart from the first end, one latch engaging with a wall in the channel within the block member and the other with a wall in a recess in the upper housing member after piercing the web between a pair of the conductors of the flat cable.

4,564,255

STRAIN RELIEF DEVICE FOR AN ELECTRICAL PLUG CONNECTOR

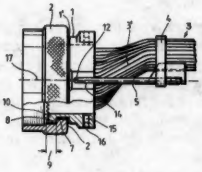
Safa Kirma, Hamburg-Wedel, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Apr. 23, 1984, Ser. No. 602,930

Claims priority, application Fed. Rep. of Germany, May 19, 1983, 3318248

Int. Cl.[4] H01R *13/58*

U.S. Cl. 339—103 R **9 Claims**



1. A strain relief device for a bundle of conductors, comprising a housing having a central axis, a cap nut having a radially inwardly extending flange with an axially facing flange surface, said housing comprising means for securing said cap nut to said housing in an axially substantially fixed manner but permitting a relative rotation between said cap nut and said housing about said central axis, conductor bundle holding means operatively secured to said housing for holding a conductor bundle against tensile stress in one of several positions relative to said central axis, said conductor bundle holding means comprising a wire bail having two prongs each with a free prong end forming a snap-in member, each prong further including a substantially straight prong section adjacent to each snap-in member, said housing having holes receiving said snap-in members for journalling said wire bail into one of several positions relative to said central axis, said housing further having grooves therein for arresting said substantially straight prong sections in any one of said several positions.

4,564,256

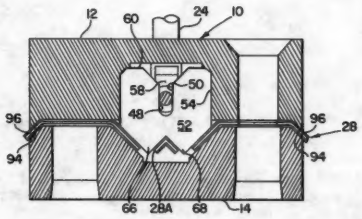
FLAT CABLE TRANSITION CONNECTOR

Ralph R. Damiano, Naugatuck; Wilfred R. Rogers, Bristol, and Charles A. Whitney, Canton, all of Conn., assignors to The Wiremold Company, West Hartford, Conn.

Filed Sep. 21, 1983, Ser. No. 534,203

Int. Cl.[4] H01R *4/24*

U.S. Cl. 339—99 R **15 Claims**



1. For establishing an electrical transition connection between a multiple conductor flat cable and a plurality of individual wire conductors, a connector comprising first and second mating housing blocks, the first housing block having multiple pairs of openings serving as wire conductor receiving apertures, the first and second housing blocks respectively having matching slots corresponding to each pair of openings in the first housing block, the matching slots being aligned in registration with one another when the housing blocks are in assembled relation, a blade contact received in each of the matching slots of the first and second housing blocks, each pair of openings in the first housing block being disposed on opposite sides of its corresponding blade contact slot and serving to secure a wire conductor, and fastening means for clamping the housing blocks in assembled relation, each blade contact being secured in an operative position when the housing blocks are in assembled relation for establishing an electrical transition connection between a flat cable conductor and an individual wire conductor.

4,564,257

LAMP ADAPTER FOR SCREW TERMINAL LAMPS

Frank G. Smerz, Addison, Ill., assignor to Cooper Industries, Houston, Tex.

Filed Mar. 25, 1983, Ser. No. 478,707

Int. Cl.[4] H01R *33/74*

U.S. Cl. 339—145 R **20 Claims**

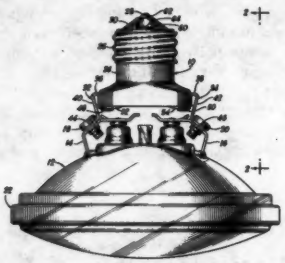
1. An adapter for adapting an electric lamp of the type having screw terminals to fit into a lamp socket comprising:

a body portion;

socket engaging base extending from said body portion; and

means including at least two screw terminal engaging mem-

bers affixed to said body portion in a predetermined spaced apart relationship for engaging said screw termi-



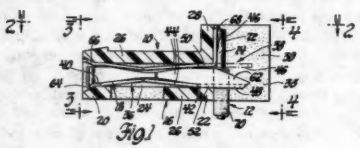
nals to affix and rigidly support said lamp to said body portion.

4,564,258

PRELOADED ELECTRICAL CONNECTOR

Jay H. Garretson; Thomas E. Lazor, both of Warren; John J. Merva, Southington; Charles R. Nestor, Niles; Robert G. Plyler, Vienna; Raymond C. Seiffert, Warren, and Jeffrey L. Ziegler, Columbiana, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 18, 1983, Ser. No. 495,632
Int. Cl.[4] H01R *4/24, 4/02*
U.S. Cl. 339—220 R 7 Claims



1. A preloaded electrical connector for mass terminating a plurality of electrical conductors, comprising

a housing having a mating end, a conductor end and a row of parallel cavities extending therethrough from the mating end to the conductor end,

said housing having opposite side walls extending across the row of parallel cavities and a flange on one of said side walls at the conductor end of the housing,

a plurality of terminals having contacts at one end and electrical conductor attaching means at the opposite end which include bendable solder tabs,

said terminals being inserted into the cavities through openings at the mating end of the housing, opposite end first and being retained therein by said solder tabs being bent over against the flange,

said conductor attaching means being disposed outside of the cavities and further including slotted portions transverse to and spaced from the bent solder tabs for receiving the electrical conductors and positioning the ends of the electrical conductors on the bent solder tabs, and

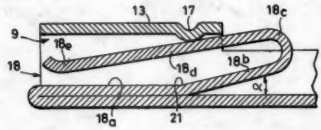
said housing further including a plurality of cantilevered fins at the conductor end which isolates the electrical conductor attaching means of the terminals from each other.

4,564,259

ELECTRICAL CONTACT ELEMENT

Bertrand Vandame, Villepreux, France, assignor to Precision Mechanique Labinal, Bois D'Arcy, France

Filed Feb. 13, 1985, Ser. No. 701,180
Claims priority, application France, Feb. 14, 1984, 84 02204
Int. Cl.[4] H01R *13/11*
U.S. Cl. 339—258 R 22 Claims



1. An electrical contact element having a first end and a second end, said first end forming a means to communicate with an electrical circuit, and said second end forming a means for connection to another element, said means for connection including:

a channel comprising a base side and a lateral side; and

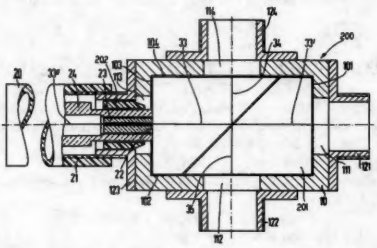
an elastic strap comprising a first section positioned against said base side, and a second section inclined at an acute angle with respect to said base side, said second section being U-shaped with a free end.

4,564,260

OPTICAL WAVEGUIDE BRANCHING UNIT AND METHOD OF MAKING SAME

Josef Dirmeyer; Norbert Odemar, and Gerhard Winzer, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,730
Claims priority, application Fed. Rep. of Germany, May 23, 1979, 2921035
Int. Cl.[4] G02B *7/26, 5/14*
U.S. Cl. 350—96.16 9 Claims



1. An optical waveguide branching unit comprising a housing, and a branching element being secured in said housing, said branching element comprising a body portion of a cover member and substrate containing an arrangement of optically interconnected waveguides between the substrate and cover member, each waveguide in said arrangement extending between at least two different surfaces of the body portion, each of said different surfaces of the body portion being polished and forming an optically flat surface extending in a plane perpendicular to the longitudinal axis of the waveguide associated therewith, each of the waveguides associated with each of said surfaces having waveguide end surfaces polished to be optically flat end surfaces terminating in the plane of the polished surface of the body portion, said housing having a planar port directly adjacent and abutting each of the polished end surfaces of the waveguides of the branching element with no intervening mechanical structure and having means for receiv-

ing and securing external optical waveguides in axial alignment with each of the optical waveguides of the branching element so that an external waveguide received and secured in each port is in direct planar abutting contact with the polished optical flat waveguide end surface lying in the plane of the polished surface of the body portion and aligned with the waveguide of the branching element to form an optical waveguide communication therewith.

4,564,261

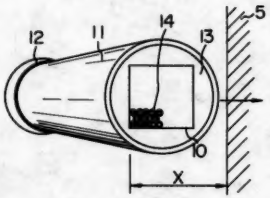
BUNDLE OF OPTICAL FIBERS

Tosaku Kojima; Kunio Matsumoto, and Yoshihisa Suzuki, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 14, 1983, Ser. No. 485,039

Int. Cl.⁴ G02B *5/16*

U.S. Cl. 350—96.24 **14 Claims**



1. A bundle structure of optical fibers stacked tier upon tier in a close-packed structure for forming a light receiving surface, wherein each of said optical fibers has a core covered with a cladding layer and the ratio of a radius of a core of each optical fiber to a radius of said optical fiber including a cladding layer ranges from 0.55 to 0.65.

4,564,262

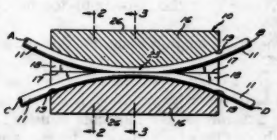
FIBER OPTIC DIRECTIONAL COUPLER

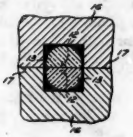
Herbert J. Shaw, Stanford, Calif., assignor to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Division of Ser. No. 139,511, Apr. 11, 1980, Pat. No. 4,493,528. This application Aug. 11, 1983, Ser. No. 522,108

Int. Cl.⁴ G02B *5/172*

U.S. Cl. 350—96.15 **28 Claims**





1. A fiber optic coupler, comprising:

a pair of single mode optical fibers, each having cladding material removed from one side thereof, to form a flat, oval area;

means for positioning said pair of fibers to juxtapose said flat, oval areas in facing relationship with the core of each fiber within the evanescent field of the other, to form an interaction region in which evanescent field coupling occurs; and

means for adjusting the degree of overlap of said flat, oval areas to change the coupling efficiency of said coupler.

4,564,263

PROCESS FOR PRODUCING PLASTIC OPTICAL FIBER

Yoshinobu Ueba, and Shinichi Miyake, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 8, 1984, Ser. No. 608,085

Claims priority, application Japan, Dec. 7, 1981, 56-197351

Int. Cl.⁴ B29C *71/04*; G02B *6/00*

U.S. Cl. 350—96.34 **11 Claims**

1. A process for producing a plastic optical fiber which consists of a core made of a homo- or co-polymer of alkyl methacrylate and a cladding made of a fluorine-containing polymer, which process comprises forming the cladding around the core and irradiating the optical fiber with an electron beam.

11. The plastic optical fiber which is produced by a process according to claim 1.

4,564,264

FLOATING LENS EXTENDING MECHANISM

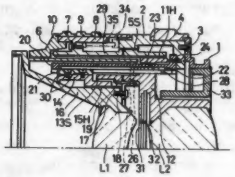
Shinsuke Komoto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1983, Ser. No. 536,084

Claims priority, application Japan, Sep. 27, 1982, 57-146133[U]

Int. Cl.⁴ G02B *7/10*

U.S. Cl. 350—255 **3 Claims**



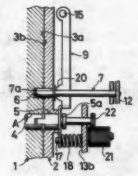
1. A mechanism for extending a floating lens comprising a stationary ring, a rear group helicoid ring rotatably supported on said stationary ring, a distance ring integral with said rear group helicoid ring, a rear group lens frame threadingly engaged with said rear group helicoid ring, first guide means for guiding said rear group lens frame for straight line reciprocal movement as said rear group helicoid ring is turned, a front group helicoid ring rotatably supported on said rear group lens frame and a front lens frame threadingly engaged with said front group helicoid ring, second guide means for guiding said front group lens frame for straight line reciprocal movement as said front group helicoid ring turns, a guide plate disposed outside said front group helicoid ring and fixedly secured to said stationary ring, a curved guide groove formed in said guide plate and a guide roller integral with said front group helicoid ring for turning said front group helicoid ring as said front group helicoid ring is moved with said rear group lens frame.

4,564,265

OPTICAL UNIT

Yukio Miki, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Sakai, Japan

Filed Aug. 29, 1983, Ser. No. 527,357
Claims priority, application Japan, Aug. 31, 1982, 57-151429
Int. Cl.[4] G42B *7/14;* G43B *3/44*
U.S. Cl. 350—255 **6 Claims**



1. In an optical unit, comprising:

a main body including dirving means;

an exchangeable optical instrument including an optical system and driven means coupled with said optical system for shifting the same for focusing;

a first mounting portion disposed on said main body and provided with a first mount surface;

a second mounting portion disposed on said optical instrument and provided with a second mount surface, said optical instrument being mountable and dismountable on and from said main body through rotation thereof relative to said main body with said first and second mount surfaces being in a sliding contact;

a first shaft provided on said main body;

a second shaft provided on said optical instrument, said first shaft being coupled with said driving means for rotation driven by said driving means while said second shaft being coupled with said driven means for driving the same upon rotation thereof, said first shaft being supported for movement in the direction parallel to the optical axis of said main body between a projecting position projecting from said first mount surface to engage said second shaft and a retracting position retracting from said first mount surface to disengage from said second shaft;

a position restricting recess provided on said second mount surface;

a position restricting member provided on said main body to be movable in the direction parallel to the optical axis of said main body between a projecting position engaging said position restricting recess to restrict the rotational position of said optical instrument relative to said main body and a retracting position retracting from said recess to release the rotational position restriction of said optical instrument;

a means for interconnecting said manually operable member with manually operable member provided on said main body; and said first shaft and said position restricting member so as to move said first shaft and said position restricting member from their projecting position to their retracting position, respectively, upon a manual operation of said manually operable member,

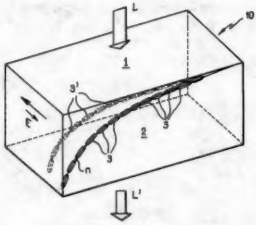
the improvement wherein said interconnecting means includes movement enlarging means provided on said main body for enlarging the movement of said first shaft from its projecting position to its retracting position relative to that of said position restricting member from its projecting position to its retracting position so that said first shaft retracts from said first mount surface before said position restricting member retracts from said first mount surface.

4,564,266

ELECTRO-OPTICAL DEVICES USING LIQUID CRYSTALS HAVING A TWIST IN A PLANE PERPENDICULAR TO SUBSTRATES

Georges E. A. Durand, Orsay; Philippe Martinot-Lagarde, Marcoussis, and Ivan Dozov, Massy, all of France, assignors to Centre National de la Recherche Scientifique (CNRS), Paris, France

Filed Apr. 21, 1983, Ser. No. 487,186
Claims priority, application France, Apr. 28, 1982, 82 07309
Int. Cl.[4] G02F *1/13*
U.S. Cl. 350—340 **23 Claims**



1. An electro-optical method using liquid crystals comprising the steps of:

filling a space between two parallel transparent plates with a material which comprises molecules having nematic properties, the structure of the molecules initially defining a substantially rectilinear nematic director perpendicular to the plates;

conferring on said material a structure defining a second nematic director curved at least once in a plane perpendicular to the plates by application of a high frequency electrical field to the material, such that the second nematic director arrives substantially perpendicularly at at least one of the two plates;

imparting a twist to the second nematic director along a component at right angles to said plane perpendicular to the plates to impart a twist in the second nematic director; and

causing light arriving with an incidence substantially at right angles to one of the plates to pass through the material, a rotation of polarization of the light, at an outlet from the plates, depending on the twist imparted to the second nematic director.

4. An electro-optical method using liquid crystals comprising the steps of:

filling a space between two parallel transparent plates with a material which comprises molecules having nematic properties, the structure of the molecule initially defining a substantially rectilinear nematic director perpendicular to the plates;

conferring on said material a structure defining a second nematic director curved at least once in a plane perpendicular to the plates by application of a magnetic field to the material, such that the second nematic director arrives substantially perpendicularly at at least one of the two plates;

imparting a twist to the second nematic director along a component at right angles to said plane perpendicular to the plates; and

causing light arriving with an incidence substantially at right angles to one of the plates to pass through the material, a rotation of polarization of the light, at an outlet from the plates, depending on the twist imparted to the second nematic director.

22. An electro-optical method using liquid crystals comprising the steps of:

filling a space between two parallel transparent plates with a

material which comprises molecules having nematic properties and non-vanishing flexoelectric anisotropy;

conferring on said material a structure defining a nematic director curved at least once in a plane perpendicular to the said plates such that the nematic director arrives substantially perpendicularly at at least one of the two plates;

imparting a twist to the nematic director along a component at right angles to said plane perpendicular to the plates with application to the material of a low frequency electrical field parallel to the plates, and with simultaneous application of a high frequency electrical field; and

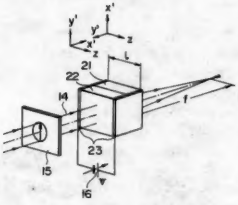
causing light arriving with an incidence substantially at right angles to one of the plates to pass through the material, a rotation of polarization of the light, at an outlet from the plates, depending on the twist imparted to the nematic director.

4,564,267

VARIABLE-FOCAL-LENGTH LENS

Yoshifumi Nishimoto, Machida, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1982, Ser. No. 453,161
Claims priority, application Japan, Jan. 7, 1982, 57-1495
Int. Cl.⁴ G02B *1/29*
U.S. Cl. 350—379 **6 Claims**



1. A variable-focal-length lens comprising:

a lens system including at least one set of electrooptic crystals cemented together on curved surfaces thereof so that the directions of their respective axes of rotatory inversion are coincident with each other and so that the directions of their respective two corresponding rotation axes differ from each other;

means for applying an electric field of uniform intensity distribution to said cemented surfaces of said electrooptic crystals so as to make said cemented surfaces refraction surfaces having a lens action; and

means for varying the intensity of the electric field to be applied, to thereby vary the focal length of said lens system.

4,564,268

OPTICAL SYSTEM FOR SEMICONDUCTOR LASER

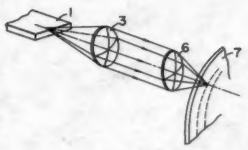
Kimio Tatsuno, Kokubunji, and Akira Arimoto, Musashimurayama, both of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed May 24, 1982, Ser. No. 381,915
Claims priority, application Japan, May 29, 1981, 56-81053
Int. Cl.⁴ G02B *3/04*
U.S. Cl. 350—409 **20 Claims**

1. An optical system for focusing a laser beam emitted from a gain guide type semiconductor laser on a predetermined recording medium which comprises a non-cylindrical lens satisfying a relatiion

$$NA \leqq \sqrt{\frac{\lambda}{\Delta Z}}$$

so as to correct astigmatism of said semiconductor laser, where NA, ΔZ and λ indicate a numerical aperture of said lens, an



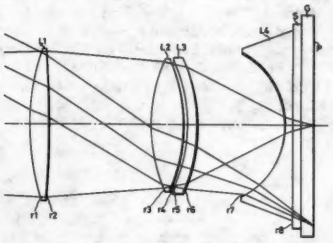
astigmatic focal distance in said semiconductor laser and a laser wavelength of said semiconductor laser, respectively.

4,564,269

PROJECTION LENS

Makoto Uehara, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 23, 1984, Ser. No. 643,436
Claims priority, application Japan, Aug. 29, 1983, 58-157681
Int. Cl.⁴ G02B *9/34, 13/18*
U.S. Cl. 350—432 **25 Claims**



1. A projection lens for a projector which projects an image on a screen, said projection lens consisting essentially of, in succession from the screen side,

a first lens of a positive refractive power;

a second lens of a positive refractive power having a biconvex shape;

a third lens of a negative refractive power having a concave surface facing to the screen side and being of the meniscus type; and

a fourth lens of a negative refractive power having a concave surface facing to the screen side.

4,564,270

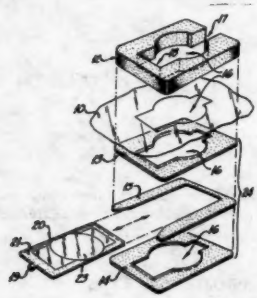
OBJECTIVE LENS COVER FOR AN OPERATING MICROSCOPE

Michael T. Willie, Redding, Conn., assignor to Surgikos, Inc., Arlington, Tex.

Filed Jul. 5, 1983, Ser. No. 510,494
Int. Cl.⁴ G02B *21/00*
U.S. Cl. 350—587 **4 Claims**

1. A disposable microscope drape for enclosing an operating microscope and having an objective lens cover secured thereto, the improvement comprising said lens cover being secured in a housing, said housing comprising a first lens contacting portion composed of a flexialbe, deformable, resilient material having a circular opening capable of being force-fitted over the objective lens ring of an operating microscope, a second portion having the same outside dimensions as said first portion sand having a circular opening aligned with the circular opening of said first section, the operating microscope drape being adhesively secured between said first and second portions, said second portion having a pocket section, a rectan-

gular lens cover removably fitted into the pocket in the second portion and a rectangular cutout on both sides of the circular



opening in the housing to provide openings for external illuminators adjacent the objective lens of the microscope.

4,564,271

RING RESONATOR AND METHOD OF FORMING

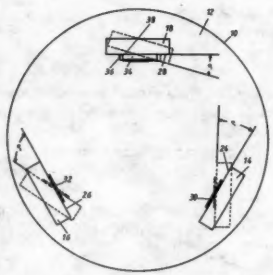
Walter Bernard, Meersburg, and Klaus Langner, Überlingen, both of Fed. Rep. of Germany, assignors to Bodenseewerk Geratetechnik GmbH, Bodensee, Fed. Rep. of Germany

Filed Nov. 7, 1983, Ser. No. 549,287

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1983, 3322212

Int. Cl.[4] G02B *7/18, 5/10*

U.S. Cl. 350—622 **7 Claims**



1. A method for mounting resonator mirrors in a laser, wherein

(a) a mirror carrier carrying the resonator mirror and a base are provided with accurately mutually complementary ground surfaces,

(b) the surfaces are polished to permit attachment by optical contact,

(c) the mutually complementary surfaces of the mirror carrier and the base are brought into proximity to each other, whereby a narrow gap remains therebetween and

(d) the mirror carrier is permanently attached to the base by attachment by optical contact,

the method comprising

(e) arranging said surfaces on the base and arranging said resonator mirror on the mirror carrier such that sliding movement of the surfaces relative to each other permits angular adjustment of the resonator mirror relative to the base,

(f) after the base and the mirror carrier have been assembled, adjusting the mirror carrier with the resonator mirror relative to the base, and

(g) in order to initiate the process of attachment by optical contact, placing an easily moistening, quickly evaporating auxiliary liquid on the edge of said gap between said polished, complementary surfaces, the auxiliary liquid being distributed by capillary action of the gap, the mirror carrier being attached to the base by optical contact after the auxiliary liquid has evaporated.

4,564,272

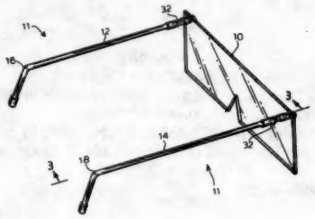
EYEGLASSES WITH INTERCHANGEABLE PARTS

Edmond A. Rinnooy Kan, 53 Mercer St., New York, N.Y. 10013

Filed Mar. 18, 1983, Ser. No. 476,540

Int. Cl.[4] G02C *5/16*

U.S. Cl. 351—153 **6 Claims**



1. Eyeglasses having parts that are quickly and easily interchangeable comprising:

a lens frame

a left temple piece comprising a stem portion attached to a left side of the lens frame and a right temple piece comprising a stem portion attached to a right side of the lens frame,

means for detachably maintaining each temple piece to the lens frame, so that by manually pulling each temple piece the temple piece is detached from its connection with the lens frame and a subsequent manual application of force may be used to reattach each temple piece to the lens frame wherein the means for detachably maintaining each temple end to the lens frame comprises:

a seat means connected to the temple, and abutting the frame, a rod connected to the seat means and extending through an aperture in the frame and beyond the plane of the frame; and an elastic sleeve friction fitted to the portion of the rod that extends beyond the plane of the frame so that the sleeve abuts the frame, and so that the sleeve is detachably maintained to the rod.

4,564,273

RETINAL CAMERA

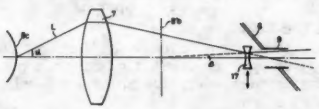
Youich Iba, and Kouji Inaba, both of Hachiouji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 324,952, Nov. 25, 1981, abandoned. This application May 3, 1984, Ser. No. 606,001

Claims priority, application Japan, Nov. 26, 1980, 55-165394

Int. Cl.[4] A61B *3/14*

U.S. Cl. 351—209 **6 Claims**



1. A retinal cameral, comprising an objective lens for forming an image of a retina of an eye to be examined at a predetermined position and for forming an image of a front eye part of the eye to be examined at a rearward position relative to said image of the retina;

a relay lens system for re-forming said image of the retina and said image of the front eye part at a predetermined position; and

an auxiliary lens having a negative refractive power arranged movably in a light path between said image of the retina formed by said objective lens and said image of the front eye part formed by said objective lens, to form, at the position of said image of the retina when said auxiliary lens is inserted in said light path, a virtual image of said image of the front eye part of the eye to be formed by said objective lens.

4,564,274

VISIBILITY GAUGE

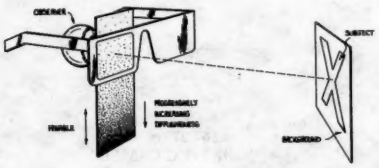
Barry A. Clark, Heidelberg, Australia, assignor to The Commonwealth of Australia, Australian Capital Territory, Australia

Filed Nov. 10, 1981, Ser. No. 320,133

Claims priority, application Australia, Nov. 13, 1980, PE6488

Int. Cl.⁴ A61B *3/00*

U.S. Cl. 351—233 **1 Claim**



1. A method of determining the visibility of a subject against a background thereof, comprising arranging a visibility gauge including a diffusing member so that the diffusing member is interposed in a light path between a subject and an observer at a position near to the observer so as to be out of focus, the diffusing member having different portions arranged in succession and operative to transmit progressively differing proportions of scattered light from the subject and its background therethrough, the total light transmittance for all said different portions being approximately constant so that no substantial change of adaptation of the observer's eye to differeng light intensitites takes place when said different portions are successively interposed in said light path, said method further including the step of progressively moving the diffusing means until a contrast between the subject and its background reaches a threshold.

4,564,275

AUTOMATIC HELIOSTAT TRACK ALIGNMENT METHOD

Kenneth W. Stone, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 21, 1984, Ser. No. 623,006

Int. Cl.⁴ F24J *3/02*

U.S. Cl. 353—3 **5 Claims**

1. A heliostat track alignment method, comprising the steps of:

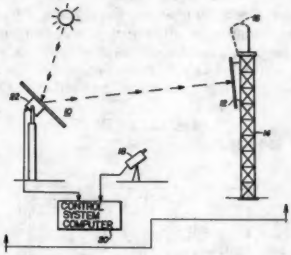
a. Commanding a sunbeam centroid to a target location to establish a reference position;

b. Searching for the actual sunbeam centroid position;

c. Determining the sunbeam centroid position error;

d. Analyzing the sunbeam centroid position error to correlate the sunbeam centroid position error to errors in a heliostat reference system;

e. Changing the heliostat reference system to correct for track misalignment to establish a revised heliostat reference system; and



f. Adjusting the heliostat track alignment to a new position based on the revised heliostat reference system to correct the track misalignment.

4,564,276

MICROFILM SENSING DEVICE WITH A PROJECTION LAMP AND COLD-LIGHT MIRROR

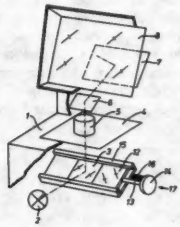
Wilfried Hofmann; Herbert Lusch, both of Taufkirchen; Walter Rauffer, Steinebach; Eberhard Zieran, Grünwald, and Jürgen Sylla, Sauerlach-Arget, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 15, 1984, Ser. No. 580,543

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1983, 3310850

Int. Cl.⁴ G03B *21/28*

U.S. Cl. 353—55 **15 Claims**



1. A device for sensing microfilms, comprising at least one projection lamp radiating infrared-component rays in addition to visible light; a cold-light mirror adapted to receive from said lamp radiation rays in a predetermined path; a microfilm platform for receiving a microfilm thereon; a projection lens positioned above said platform; a microfilm sensing means; said rays passing onto said cold-light mirror from said lamp, then onto said platform and being directed to said projection lens from which they are projected to said microfilm sensing means; at least one infrared component-reflecting mirror; and means for selectively moving said infrared component-reflecting mirror into and away from said path of the rays before said microfilm platform.

4,564,277

APPARATUS FOR A PHOTOGRAPHIC CAMERA WITH LENS AND FILM CARRIERS WHICH CAN BE RESET IN RELATION TO ONE ANOTHER

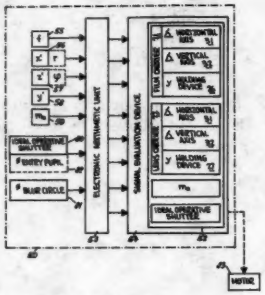
Hans-Carl Koch, Flurlingen; Carl Koch, Stetten, and Karl Gfeller, Langwiesen, all of Switzerland, assignors to Sinar AG Schaffhausen, Feuerthalan, Switzerland

Filed Oct. 5, 1984, Ser. No. 657,945

Claims priority, application Switzerland, Oct. 13, 1983, 5591/83

Int. Cl.[4] G03B 27/68

U.S. Cl. 354—160 26 Claims



1. An apparatus for a photographic camera having a lens carrier and a film carrier which are relatively adjustable to each other for the computational transmission of data regarding the lens and film carriers in regard to a facilitated attainment of optimal camera settings in relation to a motif scene to be photographed, the apparatus comprising means for generating spatial coordinate signals which define spatial positions of image points which have been optically image inverted for points of measurement of a motif scene, the spatial coordination signals capable of being entered into signal input points of an electronic calculator, and capable of being retained in the calculator, signal evaluation devices at the signal output points of the calculator, the calculator having a calculation program according to which the calculator generates electrical output signals based on the input spatial coordinate signals and Scheimpflug's Law, and passes them to the signal evaluation devices, which output signals comprise ideal-position signals corresponding to an ideal setting of one of the film carrier and the lens carrier for minimal unsharpness of the reproduction of the points of measurement, and comprise change-of-position signals corresponding to the resetting of one of the film carrier and the lens carrier required for the introduction of ideal settings.

4,564,278

EXPOSURE CONTROL DEVICE FOR CAMERA

Hiroshi Ohmura, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

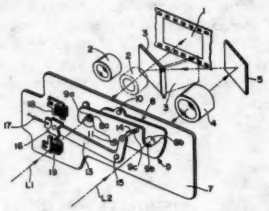
Filed Mar. 27, 1984, Ser. No. 595,543

Claims priority, application Japan, Mar. 31, 1983, 58-45832[U]

Int. Cl.[4] G03B 3/00, 9/06, 9/14

U.S. Cl. 354—195.12 9 Claims

1. In a camera having a first objective lens of a relatively long focal length, a second objective lens of a relatively short focal length, said first and second objective lenses being arranged side by side, and means selectively to establish an optical path to a film through either of said first and second lenses, the improvement comprising: first and second exposure control elements which comprise a first plate including first and second apertures which is adapted to move in a direction perpendicular to the optical axis of said first and second objective lenses and a second plate including third and fourth apertures respectively corresponding to said first and second apertures which is adapted to move in the direction opposite to that of said first plate, said corresponding apertures forming said first and second exposure control elements, respectively, a



pivotable driving lever having at least one end connected to said first and second plates and another end carrying an armature, and electromagnet means for moving said armature to control the light aperture openings of said exposure control elements.

4,564,279

PHOTOGRAPHIC CAMERA

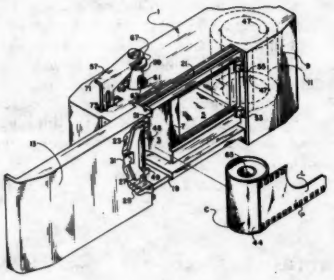
Klaus Sitzler, and Kurt Steisslinger, both of Stuttgart, Fed. Rep. of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 26, 1984, Ser. No. 674,905

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1984, 3404410

Int. Cl.[4] G03B 1/28

U.S. Cl. 354—214 7 Claims



1. In a photographic camera of the type provided with (a) a chamber adapted to receive a film cartridge having an engageable spool about which the film is wound, (b) take-up means for advancing the film from the cartridge, (c) a rewind member movable in said chamber into engagement with the spool for rotating the spool to rewind the film into the cartridge, and (d) a camera back movable to open and close said chamber, the improvement comprising:

first motion imparting means for moving said rewind member into engagement with the spool in response to closing movement of said camera back; and

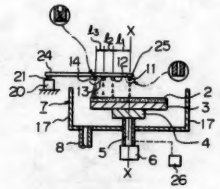
second motion imparting means for moving said rewind member out of engagement with the spool in response to opening movement of said camera back.

4,564,280

METHOD AND APPARATUS FOR DEVELOPING RESIST FILM INCLUDING A MOVABLE NOZZLE ARM

Yuji Fukuda, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 25, 1983, Ser. No. 545,329
Claims priority, application Japan, Oct. 28, 1982, 57-190250; Oct. 28, 1982, 57-190252
Int. Cl.[4] G03D 5/04; B08B 3/02
U.S. Cl. 354—317 11 Claims



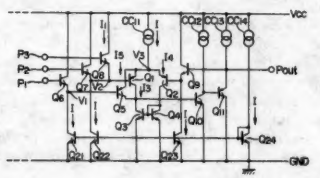
1. A method for developing a resist film coated on a rotatable base plate with a developer which is fed from a plurality of nozzles arranged on a nozzle arm along the length of the nozzle arm, said nozzle arm extending over the resist film, comprising feeding the developer from the respective nozzles onto the resist film while rotating the base plate and while scanning the nozzle arm in a plane parallel to the base plate, over the resist film so that the scan covers at least the surface area of the resist film between the axis of rotation of the base plate and the periphery of the resist film.

4,564,281

SIGNAL SELECTOR FOR AUTOMATIC EXPOSURE APPARATUS OF CAMERA

Mikio Takemae, Yokohama; Sakuji Watanabe, Warabi, and Yuji Okubo, Omiya, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 481,742, Apr. 4, 1983, abandoned. This application Nov. 14, 1984, Ser. No. 671,024
Claims priority, application Japan, Apr. 9, 1982, 57-59177
Int. Cl.[4] G03B 7/087, 17/18; H03K 5/22
U.S. Cl. 354—442 3 Claims



1. A device for generating an analog signal in accordance with first, second and third analog signals, including:

(a) first producing means for producing a fourth analog signal in accordance with a difference between levels of said first and second analog signals, a level of said fourth analog signal being substantially equal to a higher level out of said first and second analog signals, said first producing means including two bipolar transistors, a base of one of said two bipolar transistors receiving said first analog signal, and a base of the other of said two bipolar transistors receiving said second analog signal, collectors of said two bipolar transistors being connected to each other, and emitters of said two bipolar transistors being connected to each other; and

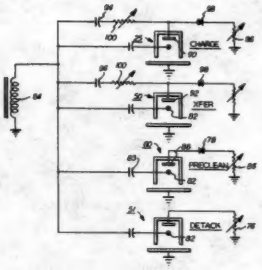
(b) second producing means for producing a fifth analog signal inaccordance with a difference between levels of said third and fourth analog signals, a level of said fifth analog signal being substantially equal to a lower level out of said third and fourth analog signals, said second producing means including two bipolar transistors, a base of one of said two bipolar transistors receiving said fourth analog signal, a base of the other of said two bipolar transistors receiving said third analog signal, collectors of said two bipolar transistors being connected to each other, and emitters of said two bipolar transistors being connected to each other.

4,564,282

CORONA CHARGING DEVICE

Vittal U. Shenoy, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 15, 1982, Ser. No. 441,356
Int. Cl.[4] G03G 15/02; H01T 19/00
U.S. Cl. 355—3 CH 1 Claim



1. Xerographic reproducing apparatus, said apparatus comprising:

means for forming a powder image on a charge retentive surface and transferring the image to a substrate;

means for assisting in the removal of said substrate from said surface, said means comprising a corona device including an electrode and a conductive shield which is self-biased by means of a resistor through which the shield is connected to ground;

a preclean corona device comprising an electrode having an insulative coating and a conductive shield;

means for applying a.c. power to said preclean electrode, said insulative coating being thick enough to substantially preclude net d.c. current flow from said preclean electrode; and

a self-biasing electrical circuit connecting said conductive shield of said preclean corona to ground, said circuit including means to cause sufficient current to flow in said circuit for effecting substantial neutralization of charged residual toner electrostatically adhered to said charge retentive surface when said surface with said charged residual toner is moved past said preclean electrode and a.c. power is applied to said preclean electrode;

corona devices for uniformly electrostatically charging said charge retentive surface and electrostatically transferring toner images to said substrate, each of said corona devices for charging and transferring comprising a conductive shield and an electrode;

said means for applying a.c. power comprising a single secondary winding and all of said electrodes being operatively connected thereto; and

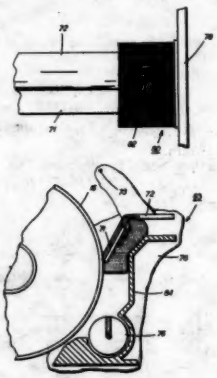
said shields of said corona devices for charging said charge retentive surface and transferring toner images being partially self-biased and partially biased via said secondary winding.

4,564,283

BLADE CLEANER APPARATUS FOR REMOVING TONER FROM A CHARGE-RETENTIVE SURFACE

Wayne D. Fox, and Barry J. Gheer, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 22, 1984, Ser. No. 623,067
Int. Cl.[4] G03G *21/00*
U.S. Cl. 355—15 20 Claims



1. Cleaner apparatus for removing residual toner from a charge-retentive surface movable through an endless path, said apparatus comprising:

a cleaner housing;

a blade and blade holder supported such that the blade's edge contacts the charge-retentive surface; and

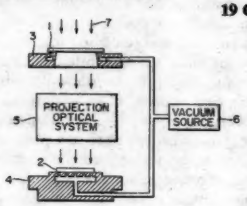
means contacting the ends of said blade and blade holder, said charge-retentive surface and said cleaner housing to block air movement created by the movement of said charge-retentive surface past the ends of said blade thereby redirecting the air movement to an area behind said blade whereby toner contained in said air separates therefrom.

4,564,284

SEMICONDUCTOR EXPOSURE APPARATUS

Shinji Tsutsui, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 531,298, Sep. 12, 1983, abandoned. This application Jun. 5, 1985, Ser. No. 741,218
Claims priority, application Japan, Sep. 12, 1983, 57-162029
Int. Cl.[4] G03B *27/52, 27/20*
U.S. Cl. 355—30 19 Claims



1. A semiconductor exposure apparatus having:

a mask clutch for holding a mask; and a wafer chuck for holding a wafer;

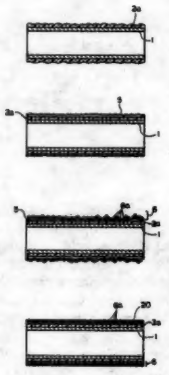
the holding portion of at least one of said chucks having a coefficient of linear expansion substantially coincident with the coefficient of linear expansion of the mask or the wafer held thereby.

4,564,285

DEVELOPING DEVICE HAVING DISPERSED FLOATING ELECTRODES IN A DIELECTRIC LAYER

Wataru Yasuda, Yokohama; Koji Sakamoto, Tokyo, and Fuchio Kanno, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed May 27, 1983, Ser. No. 498,988
Claims priority, application Japan, May 31, 1982, 57-91448; Jun. 7, 1982, 57-96344; Jun. 7, 1982, 57-96345; Jun. 25, 1982, 57-108390
Int. Cl.[4] G03G *15/08*
U.S. Cl. 355—3 DD 16 Claims



1. A device for developing an electrostatic latent image on an image supporting member by applyir.g a single component developer to said latent image, comprising;

a tank for containing therein a quantity of developer;

developer transporting means for transporting said developer supplied from said tank along a predetermined path including a developing region where said electrostatic latent image may be developed, said developer transporting means including first electrode means and second electrode means which is electrically isolated from said first electrode means, said second electrode means including a plurality of fine electrodes which are electrically isolated from each other and each of which is previously coated with an insulating material having a volumetric resistivity of approximately 10^{12} ohms-cm or more to a thickness approximately ranging between 0.5 microns and 0.5 mm, at least some of said fine electrodes being exposed at the surface of said developer transporting means of which said film of developer is formed: and

means for forming a film developer of a predetermined thickness on said developer transporting means before reaching said developing station.

4,564,286

ILLUMINATION DEVICE

Dominick J. Maiorano, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 9, 1983, Ser. No. 502,783
Int. Cl.[4] G03G *15/00;* G03B *27/00*
U.S. Cl. 355—11 12 Claims

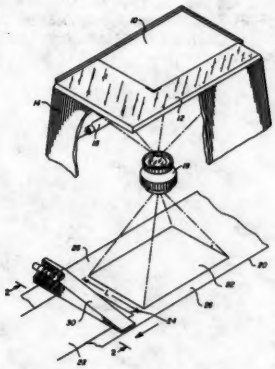
1. A linear illumination assembly comprising:

a linear, solid, transparent member at least one sector of which has a wedge-shaped configuration characterized by having a top specularly reflecting surface obliquely inclined to a horizontal bottom surface, and

an illumination source adapted to couple light into said wedge-shaped sector;

said illumination source positioned within an aperture formed in said transparent member and in a medium hav-

ing a refractive index n ' and said transparent member having a refractive index n greater than n' wherein said light proceeds by internal reflection along the obliquely inclined surface of said member, said light being totally



internally reflected from said surface when forming an angle of incidence greater than a critical angle I_c a portion of said light exiting the base surface of said member when forming an angle of incidence less than angle I_c where $I_c = \arcsin n'/n$.

4,564,287

IMAGE FORMATION APPARATUS INCLUDING MEANS FOR DETECTING AND CONTROLLING IMAGE FORMATION CONDITION

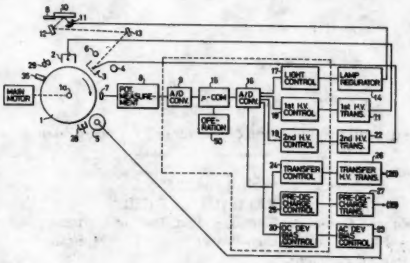
Koji Suzuki, Yokohama; Kouki Kuroda, and Jyoji Nagahira, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 384,070, Jun. 1, 1982, abandoned. This application Aug. 14, 1984, Ser. No. 640,654

Claims priority, application Japan, Jun. 11, 1981, 56-88898

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—14 D **22 Claims**



1. An image formation apparatus comprising:

image forming means for forming an image of an original on a recording medium;

standardizing means for standardizing image formation conditions of said image forming means prior to the operation of said image forming means to form an original image on the recording medium and without regard to conditions of the original;

detecting means for detecting conditions of the image of the original after completion of standardization of said image formation conditions by said standardizing means; and

controlling means coupled to an output of said detecting means for controlling the image formation conditions in response to said detection by said detecting means so as to form an image in accordance with the image of the original.

4,564,288

ELECTROSTATIC RECORDING APPARATUS

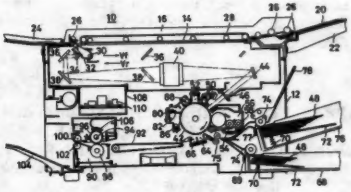
Torahiko Nonoue; Etsuzo Moriki; Yoshifumi Miyazaki; Takahal Izawa; Shinichi Kikkawa, and Kenhachi Shiraki, all of Hyogo, Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Jan. 14, 1985, Ser. No. 691,277

Claims priority, application Japan, Jul. 2, 1984, 59-136951

Int. Cl.⁴ G03B *27/34, 27/40, 27/70*

U.S. Cl. 355—57 **8 Claims**



1. An electrostatic recording apparatus comprising

a scanning means being moved reciprocatively for scanning an original copy,

a paper feeding means for feeding papers,

a visible image forming means for forming an image responding to an original copy scanned by said scanning means as a visible image on a paper fed by said paper feeding means, and

a moving speed changing means for changing the moving speed at returning motion of said scanning means associated with the time of paper feeding means.

4,564,289

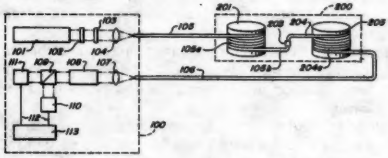
SINGLE MODE OPTICAL FIBER POLARIMETRIC STRESS SENSOR HAVING OPTICAL COMMON MODE REJECTION

William B. Spillman, Jr., Acton, Mass., assignor to Geo-Centers, Inc., Newton Upper Falls, Mass.

Filed Jul. 31, 1984, Ser. No. 636,397

Int. Cl.⁴ G01B *11/18;* **G01D** *5/26*

U.S. Cl. 356—33 **5 Claims**



1. In a polarimetric device of the kind having

(i) a first optical fiber of the kind exhibiting birefringence when stressed,

(ii) first stress applying means responsive to phenomenon to be sensed for stressing the first optical fiber,

(iii) a source of polarized light,

(iv) means for directing the polarized light into the first optical fiber along its longitudinal axis,

(v) beam splitting means for splitting the light transmitted through the first optical fiber into a plurality of beams, and

(vi) means responsive to the plurality of beams for providing a measure of the stress on the optical fiber,

the improvement providing optical common mode rejection comprising

(a) a second optical fiber having substantially the same properties as the first optical fiber, the two optical fibers being in series in relation to the longitudinal transmission of the polarized light through those fibers,

(b) second stress applying means for applying stress to the second optical fiber, the length subject to stress of the second optical fiber being the same as the length subject to stress of the first optical fiber,

(c) an optical fiber segment interposed between and connecting the first and second optical fibers, the optical fiber segment causing polarized light transmitted through the fiber segment to be rotated by 90° whereby stresses imposed equally on the first and second optical fibers have equal and opposite effects on the phase difference between orthogonal components of the polarized light transmitted through the first and second optical fibers.

4,564,290

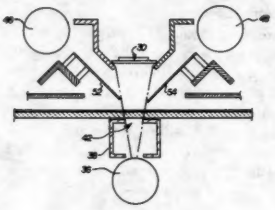
APPARATUS FOR DETERMINING IMAGE AREAS FROM FILMS AND PLATES

David D. Bell, and Gary A. Dobson, both of Westerly, R.I., assignors to Harris Graphics Corporation, Melbourne, Fla.

Filed Sep. 30, 1982, Ser. No. 430,886

Int. Cl.⁴ G01N *21/17*; G01B *11/28*

U.S. Cl. 356—73 **4 Claims**



1. A combination film and plate scanning device for determining the image area of an image member which image area is to be printed, said device comprising:

transparent support means for supporting a plate or film to be scanned, said support means having a viewing area,

sensor means for detecting radiation from the plate or film, said sensor means being located above said viewing area,

control means including switching means for selectively switching between a plate scan mode and a film scan mode,

first radiation means for providing radiation to the film to be scanned at said viewing area on said support means, said first radiation means being located beneath said support means,

second radiation means for providing radiation to the plate to be scanned at said viewing area, said second radiation means being located above said support means,

means for channeling the light from said second radiation means and directing it an angle to the plate to be scanned at said viewing area, said means for channeling the light including optical baffle means, said optical baffle means including at least two optical baffle members each with edge portions which at least in part define an optical window at said viewing area and through which the radiation detected by said sensor means passes,

means for moving at least one of said optical baffle members to change the effective size of said optical window when switching between the plate scan mode and the film scan mode, and said switching means including means for disabling and actuating said first and second radiation means, respectively, when switching between the film scan and plate scan modes, respectively.

4,564,291

PROJECTION TYPE LENSMETER

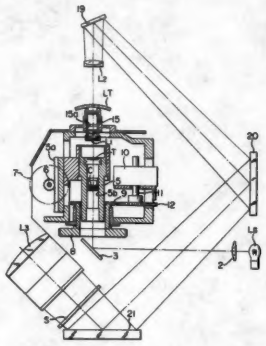
Hisakazu Yoshino; Masayuki Takasu, and Junji Kuroiwa, all of Tokyo, Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1980, Ser. No. 214,624

Claims priority, application Japan, Dec. 19, 1979, 54-165086

Int. Cl.⁴ G01M *11/02*

U.S. Cl. 356—125 **1 Claim**



1. A projection type lens meter comprising: a lens mount for mounting a lens to be examined, a target-projecting optical system for projecting the target projection light through said lens on said lens mount and for magnifying and focussing said light on a screen, and an observation optical system for magnifying and observing the target image on said screen, said target-projecting optical system including a collimeter lens having a focal length f_1 and adapted to collimate said target projection light, and a projection lens having a focal length f_2 and adapted to project the target projection light beam on said screen, said observation optical system having an effective diameter ϕ and a magnification m_2, said focal lengths f_1, f_2, effective diameter ϕ and magnification m_2 satisfying the following relations of:

$$25 \text{ mm} \leqq f_1 \leqq 30 \text{ mm}$$

$$409 \text{ mm} \leqq f_2 \leqq 600 \text{ mm}$$

$$60 \text{ mm} \leqq \phi \leqq 70 \text{ mm}$$

$$1.25 \leqq m_2 \leqq 1.83$$

the overall magnification of said lens meter being 30 or greater.

4,564,292

REFRACTOMETER

Reinhard Omet, Babenhausen, Fed. Rep. of Germany, assignor to Phoenix Artmaturen-Werke Bregel GmbH, Frankfurt, Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 614,722

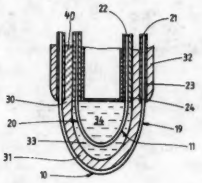
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1983, 3321203

Int. Cl.⁴ G01N *21/41*

U.S. Cl. 356—133 **5 Claims**

1. In a refractometer for measuring the index of refraction of a sample medium, comprising a source of light; a sample medium sensor surrounded by a sample medium, a first light conductor coupling said sample medium sensor to the source of light so that the light from said source is directed along said sample medium sensor, said first light conductor having a substantially U-shaped curved unscreened portion which forms said sample medium sensor, first photodetection means connected to said first light conductor for measuring the trans-

mitted radiant energy passed through said sample medium sensor; a reference medium sensor surrounded by a reference medium; a second light conductor coupling said reference medium sensor to said source of light; second photodetection means connected to said second light conductor for measuring the transmitted radiant energy passed through said reference medium sensor; test data processing means for measuring the difference in light transmitted by each sensor; and indicator means for indicating the index of refraction in accordance with said difference, the improvement comprising a single measuring probe, said sample medium sensor and said reference medium sensor being combined into said single measuring probe;



a housing accommodating said source of light, said first and second photodetection means, said test data processing means and said indicator means; and cable means connecting said single probe to said housing, said probe including an elongated probe member, a casing surrounding said probe member, and a measuring tip having in the direction of elongation of the probe a substantially U-shaped cross-section and extended outwardly from said casing, said measuring tip having an outer surface carrying thereon said sample medium sensor, said measuring tip being formed with an internal hollow space filled with the reference medium, said reference medium sensor being positioned in said hollow space.

4,564,293

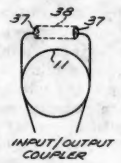
FIBER OPTIC LOOP INTERFEROMETER AND METHOD WITH COINCIDENT BACKSCATTER ELIMINATION

Steven A. Newton, Palo Alto; Herbert J. Shaw, Stanford, and Cassius C. Cutler, Palo Alto, all of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Division of Ser. No. 200,431, Oct. 24, 1980. This application Aug. 5, 1983, Ser. No. 520,605

Int. Cl.⁴ G01B *9/02;* **G01C** *19/64*

U.S. Cl. 356—350 **19 Claims**



1. An interferometer comprising:

a loop of fiber optic material;

means for introducing a first light pulse and a second light pulse into said loop, said first and second light pulses having opposite directions of travel in said loop so that said first and second light pulses overlap in a predetermined segment of said loop;

means for combining said first and second light pulses to form an interference pattern; and

means for monitoring the interference pattern, said monitoring means being responsive to backscattered waves which originate only in said predetermined segment;

wherein said predetermined segment of said loop is formed of an optical fiber having a greater degree of purity than the fiber optic material which comprises the remainder of said loop.

4,564,294

ENCAPSULATED PHOTOELECTRIC MEASURING SYSTEM

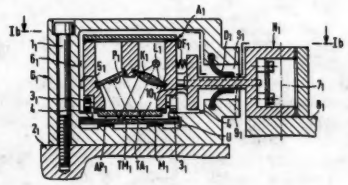
Alfons Ernst, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Feb. 29, 1984, Ser. No. 584,825

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1983, 3311118

Int. Cl.⁴ G01B *11/14*

U.S. Cl. 356—374 **7 Claims**



1. In an encapsulated photoelectric measuring system for measuring the relative position of two objects, of the type comprising a measuring scale, a scanning unit for scanning the scale, means, included in the scanning unit, for illuminating at least a first surface of the scale, means for connecting the scanning unit with one of the two objects, a housing which encapsulates the scale and the scanning unit and defines an opening through which the connecting means passes, and at least one sealing element for sealing the opening, the improvement comprising:

means for hermetically sealing the scanning unit, said scanning unit sealing means comprising:

a photopermeable surface positioned adjacent to the first surface of the scale substantially parallel thereto, said photopermeable surface and said first surface defining a gap therebetween having a width sufficiently small to spread liquid drops on the first surface in the region of the photopermeable surface into a continuously homogeneous wetted liquid layer.

4,564,295

APPARATUS AND METHOD FOR PROJECTION MOIRE TOPOGRAPHY

Maurice Halioua, Port Jefferson, N.Y., assignor to New York Institute of Technology, Old Westbury, N.Y.

Filed Mar. 7, 1983, Ser. No. 473,057

Int. Cl.⁴ G01B *11/24, 15/04*

U.S. Cl. 356—376 **20 Claims**

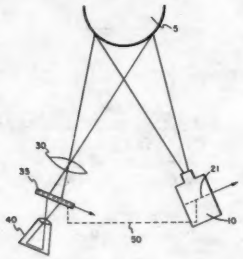
1. Apparatus for obtaining a moire fringe pattern images of an object, comprising:

means for projecting a beam of radiation at the object;

a movable projection grating disposed in said projecting means in the path of the beam projected at the object;

means for focusing the beam reflected from the object to obtain an image at an image plane;

a movable reference grating disposed at the image plane;



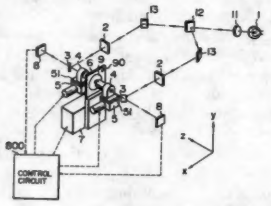
means for recording the image at the image plane; and means for moving said gratings in synchronism.

4,564,296

PLATE THICKNESS MEASURING METHOD AND APPARATUS

Yoshitada Oshida, Fujisawa; Hiroshi Makihara, and Nobuhiko Aoki, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 24, 1981, Ser. No. 305,374
Claims priority, application Japan, Sep. 26, 1980, 55-132923
Int. Cl.[4] G01B *11/06*
U.S. Cl. 356—381 **14 Claims**



1. A plate thickness measuring apparatus comprising:

a light source;

a fine pattern of alternately arranged opaque and transparent stripes which includes a plurality of said opaque stripes and a plurality of said transparent stripes onto which light is radiated from said light source;

a pair of object lenses respectively provided oppositely to one another adjacent to front and rear sides of the object to be measured for projecting said fine pattern onto the front and rear surfaces of the object to be measured;

a pair of moving means for moving said pair of object lenses in the optical-axis direction perpendicular to the front and rear surfaces of the object to be measured, each of said moving means respectively providing a drive means for automatically moving an associated one of said object lenses;

a pair of imaging devices respectively disposed at predetermined positions adjacent to said front and rear surfaces to pick up images by scanning reflected images of said fine patterns formed on the front and rear surfaces of the object to be measured which are reflected through said pair of object lenses, each of the reflected images being formed of alternately arranged light and dark stripes;

calculating means for integrating a plurality of contrast signals each comprising a difference between a light stripe signal and dark stripe signal of an image signal of a reflected image pattern picked up by said imaging devices to thereby obtain integral contrast signals for said front and rear surfaces of said object to be measured;

control means for actuating each of said drive means provided in each of said moving means to control the positions of the object lenses so as to achieve a maximum value of said integral contrast signals for said front and rear surfaces of said object to be measured obtained from said calculating means;

a pair of position detecting means for detecting the positions of said object lenses such that the relative positions of said object lenses are at the same value when the thickness of the object to be measured is zero; and

measuring means for estimating the difference between the relative positions of the object lenses which are obtained from each of said position detecting means when each of said moving means are controlled by said control means to achieve the focused condition on the front and rear surfaces of the object, so as to determine the thickness of the object to be measured,

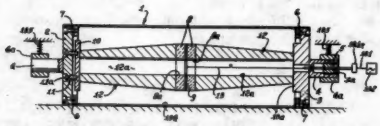
wherein said fine pattern is formed of regular arrangement of dense and coarse patterns having at least two different space frequencies.

4,564,297

VIBRATORY TREATMENT OF MOVING SURFACES

Francis G. Firth, 96 Blue Lagoon, 30781 S. Coast Hwy., Laguna Beach, Calif. 92651

Filed Aug. 19, 1983, Ser. No. 524,653
Int. Cl.[4] B01F *11/00*
U.S. Cl. 366—108 **34 Claims**



1. The method of employing a body having a generally cylindrical wall to treat a work surface moving relative to the body, that includes

(a) effecting vibration of said wall, to produce radial oscillation thereof,

(b) causing said wall to rotate and to contact said relatively moving work surface while the wall rotates thereby to transmit said radial oscillation to said work surface,

(c) said vibration being at a frequency or frequencies to cause densification of the work,

(d) said (a) step carried out to produce wall oscillation along its length in contact with the work surface,

(e) said body comprising a tube defining said wall, and said (a) step vibration being carried out to effect generally lengthwise oscillating displacement of the tube which results in corresponding generally radial oscillating displacement of the tube wall.

4,564,298

HYDROFOIL INJECTION NOZZLE

Gregory A. Gritters, Indio; Walter E. Nellis, Bermuda Dunes, and John L. Featherstone, El Centro, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed May 15, 1984, Ser. No. 610,323
Int. Cl.[4] B01F *15/02*
U.S. Cl. 366—167 **29 Claims**

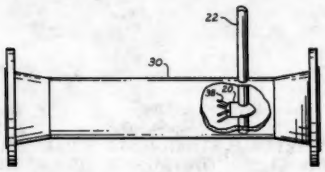
1. An injection nozzle useful for injecting a corrosive fluid into a fluid stream, comprising:

(1) a hydrofoil injection housing having a relatively paraboloid portion at one end;

(2) a tubular manifold conduit for delivering corrosive fluid

into said injection housing, said tubular manifold conduit being connected thereto in fluid-tight arrangement; and

(3) a plurality of injection tubes which extend from said hydrofoil through the end of said injection housing oppo-



site the vertex of the paraboloid, said injection tubes each having an axial bore which connects in fluid-tight arrangement with the interior of said housing and in fluid communication therewith.

4,564,299

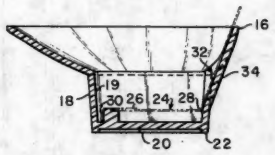
BODY LIQUID TEMPERATURE MEASURING DEVICE

Joel R. Ehrenkranz, 146 Irving Ave., So. Orange, N.J. 07079

Filed Jun. 15, 1984, Ser. No. 620,970

Int. Cl.⁴ G01K *13/00*; G01N *1/10*

U.S. Cl. 374—157 **18 Claims**



1. An apparatus for determining core body temperature by measuring the temperature of urine comprising:

a receptacle for receiving said urine, said receptacle including an upper portion having an opening therein, a base portion which functions to receive said sample of urine, a circumferential lip portion surrounding said opening, said opening have a generally eliptical shape and adapted to receive urine from human females;

a lid means for engaging said lip portion and forming an air and liquid-tight seal with respect to said lip portion;

temperature measuring means for measuring the temperature of said urine as it is being collected and for providing an indication of said temperature for a prolonged period after collection thereby serving as an indication that said sample of urine was fresh when collected, said temperature measuring means comprising a removable chemical melting point type of thermometer;

means for releasably attaching said temperature measuring means to said apparatus so that said temperature measuring means may be readily removed from said apparatus;

supporting means comprising a pedestal-like means for supporting a first portion of said temperature measuring means a predetermined distance above the inside bottom of said base portion of said receptacle;

pour spout means incorporated in said receptacle for removing urine from said receptacle; and,

dead air space means located on the exterior of said base portion on the opposite side thereof from said pedestal-like means for insulating said urine from the temperature of exterior surfaces upon which said apparatus may rest.

4,564,300

BEARING SUPPORT STAND

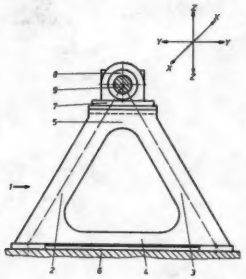
Gerd Schulze, Oberhausen, Fed. Rep. of Germany, assignor to Deutsche Babcock Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Continuation of Ser. No. 178,857, Aug. 18, 1980, abandoned, which is a division of Ser. No. 935,740, Aug. 21, 1978, Pat. No. 4,235,483. This application Jun. 18, 1982, Ser. No. 390,066

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744697

Int. Cl.⁴ F16C *27/00*

U.S. Cl. 384—581 **2 Claims**



1. A bearing support stand for a rotating shaft comprising: a supporting plate; bearing means being carried by said supporting plate; said bearing means being arranged for providing relative movement of a housing of said bearing means exclusively about the axis of said shaft; spring means resilient in the direction of said shaft and substantially rigid in a plane perpendicular to said shaft; said supporting plate resting on said spring means; said supporting plate being parallel to a horizontal plane passing through said shaft; said spring means comprising a single spring; said plate being guided parallel to a horizontal plane intersecting said shaft upon deformation of said spring means, said bearing means being substantially rigidly fixed in direction perpendicular to the shaft, said shaft being held rigidly in direction of a load, said bearing means being supported by said spring means at the point of application of the load; said spring means comprising a bottom spring and a top spring; strut means connecting said bottom spring and said top spring; said springs being comprised of structural iron having an I-profile.

4,564,301

TYPEWRITER WITH TEXT MEMORY

Hideo Ueno, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 4, 1984, Ser. No. 596,587

Claims priority, application Japan, Apr. 12, 1983, 58-64328

Int. Cl.⁴ B41J *5/30*; G06K *3/00*

U.S. Cl. 400—63 **7 Claims**

1. A typewriter with text memory, comprising

a printer for performing operation using a printing head supported for movement along printing lines of a printing paper held on a paper holding member;

a keyboard having a number of character keys, symbol keys and function keys arranged thereon;

a text memory for sequentially storing printing data and function data, entered from said keyboard;

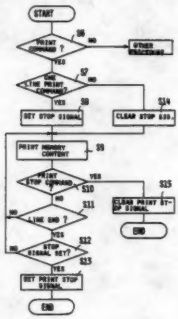
said function keys including a code key, said code key being operated together with any one of said above character keys, function keys, and symbol keys so as to generate code data which is different from code data generated when said any one of said character keys and symbol keys is operated solely;

printing stop command data generating means for storing a

printing stop command data in said text memory in response to said code key and one of said character keys being operated concurrently;

said function keys further including a continue key, said continue key operating to start printing operation again after printing operation is stopped according to said printing stop command data in said text memory;

first printing control means rendered operative in response to concurrent depressions of said code key and another



character key, except said one of said character keys, for causing said printer to print data stored in said text memory from a prescribed position until said printing stop command data is detected; and

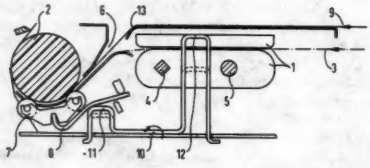
second printing control means rendered operative in response to concurrent depressions of said code key and said continue key and including detecting means, for causing said printer to print data stored in said text memory until said detecting means detects a carriage return data in the text memory, and then to stop printing operation.

4,564,302

CONTROL DEVICE FOR PRINTER WHICH HAS FUNCTION OF FORMAT DATA PRINTING

Kikuo Hatazawa, Atsugi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 15, 1983, Ser. No. 551,910
Claims priority, application Japan, Nov. 15, 1982, 57-200086
Int. Cl.[4] B41J *5/30*
U.S. Cl. 400—76 **3 Claims**



1. A printer control device for outputting format data and printing data in a superposed state, comprising:

a first memory for storing printing data;

a second memory for storing format data, said format data containing control information indicative of a position where said printing data is superposed on said format data;

first control means for reading out said format data from said second memory to generate a first video signal, and generating a control signal when said control information is read out;

second control means responsive to said control signal for reading out said printing data from said first memory to generate a second video signal; and

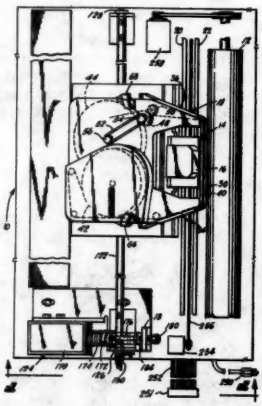
superposing means for outputting said first and second video signals.

4,564,303

NONTILTABLE, STRAIGHT LINE PATH RIBBON CARTRIDGE SHIFTING MEANS FOR MULTICOLOR RIBBON INCLUDING MICR INK

Michael J. Rosenberg, 3327 Euclid Heights Blvd., Cleveland Hts., Ohio 44118, and Alfred C. Erpel, Doylestown, Pa., assignors to Michael J. Rosenberg, Cleveland Heights, Ohio

Filed Jun. 9, 1983, Ser. No. 502,671
Int. Cl.[4] B41J *32/00*
U.S. Cl. 400—208 **9 Claims**

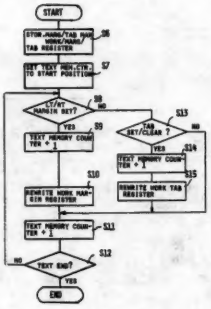


1. A cartridge and drive assembly for use with a printer having a frame and an axially reciprocatable print head, the improvement comprising ribbon cartridge means for containing a plurality of bands of inked ribbon, means for supporting a portion of each of said bands of inked ribbon in a common plane, and means for shifting said cartridge means along a straight line path between a first position in which one of said bands of inked ribbon is aligned for printing and a second position in which another of said bands of inked ribbon is aligned for printing, carriage means for supporting said ribbon cartridge means, said carriage means and ribbon cartridge means being movable with said print head, and said means for shifting comprising a shaft fixed against axial movement, rotatably mounted in fixed position relative to said frame, and extending axially parallel to the axis of reciprocation of said print head, motive means for producing a mechanical output to effect shifting, said motive means being mounted fixed to said frame against reciprocation with said carriage means and being coupled to said shaft to rotate said shaft to effect shifting, a crank arm axially slidable along said shaft and fixed against rotation relative to said shaft, and means for connecting the distal end portion of said crank arm with said ribbon cartridge means to effect movement of said ribbon cartridge means along the straight line path upon rotation of said shaft, and said carriage means including means for positioning the axis of said shaft with respect to said carriage and for positioning said crank arm with respect to said carriage.

4,564,304
TYPEWRITER WITH RESETTING FUNCTION FOR MARGIN POSITION AND TAB POSITION

Hideo Ueno, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 26, 1984, Ser. No. 593,235
Claims priority, application Japan, Apr. 12, 1983, 58-64327
Int. Cl.[4] B41J *19/60*
U.S. Cl. 400—279 4 Claims



1. A typewriter capable of resetting margin position and tab position after interruption of text creation, comprising

a printing unit for performing printing operation using a printing head supported for movement along printing lines of a printing paper held on a paper holding member;

a keyboard having a plurality of character keys, symbol keys and function keys, said function keys including a text memory key and text continuation means including a code key and, said text continuation means being concurrently with another key operable to enable continuing of text creation after interruption of text creation without manual resetting of said margin position and said tab position;

a text memory, responsive to operation of said text memory key, for sequentially storing printing data and function data, including margin information and tab information, entered from said keyboard by operation of said character keys, symbol keys and function keys of said keyboard;

a work register comprising a work margin register and a work tab margin register, for registering respectively said margin information and said tab information upon entry thereof through said text memory and responsive to below recited sequential rewriting means, for rewriting said margin and tab information;

reading means, responsive to turning ON of said text continuation means, for sequentially reading out said printing data and said function data, including said margin information and said tab information, stored in said text memory and in said work register;

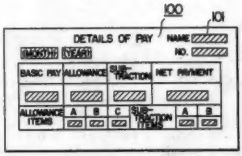
detecting means for detecting whether data read out by said reading means is margin information or tab information; and

sequential rewriting means, responsive to said detecting means detecting margin information or tab information read out by said reading means, for sequentially rewriting contents of said work register to be equal to the contents at the time of said interruption.

4,564,305
TRANSPORT DEVICE FOR MARGIN-PERFORATED FANFOLD PAPER AND FOR CONTINUOUS ROLL PAPER

Rudolf Rekewitz, Wolfratshausen, and Hermann Wambach, Unterhaching, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 14, 1983, Ser. No. 484,979
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 3214549
Int. Cl.[4] B41J *11/50*
U.S. Cl. 400—605 6 Claims

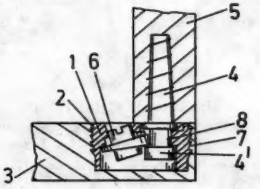


5. A paper transport mechanism for data printers comprising a power driven platen, a platen opposed pinch roller assembly, means for applying a force to said pinch roller assembly for urging said pinch roller assembly against said platen, paper guide means for guiding paper to the nip area between the pinch roller assembly and the platen on an upstream infeed side of said nip area, a marginal perforation paper tractor drive positioned upstream of said platen for supplying, under positive drive, margin perforated paper to said guide means, means for supplying unperforated paper to said guide means independent of said tractor drive, means for adjusting said means for applying a force without withdrawing said pinch rollers from said paper, said means for adjusting providing a first force for use in connection with tractor drive supplied perforated margin paper and a second force for use with non-tractor drive supplied paper, said first force being a positive force less than said second force and allowing slip to occur between said paper and said platen.

4,564,306
FURNITURE FITTING

Erich Röck, Höchst, and Helmut Hollenstein, Dornbirn, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Feb. 2, 1983, Ser. No. 463,265
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1982, 8206023[U]
Int. Cl.[4] B25G *3/00;* F16B *12/00*
U.S. Cl. 403—14 4 Claims



1. In a joining device for joining at right angles two furniture parts, said joining device including a pin-like connecting member to be fastened to one furniture part and having a head portion, a cylindrical dowel casing to be inserted into a bore in the other furniture part, said casing having an eccentrically positioned aperture through which extends said head of said connecting member, and a holding member rotatably mounted

in an inclined orifice in said casing for contacting said head and fixing together said casing and said connecting member, the improvement of means for ensuring reliable insertion of said head into said aperture during assembly of the furniture parts, said means comprising:

a generally funnel-shaped recess formed in said casing to lead into said aperture, said recess being elongated in directions generally transverse of a diametral plane of said casing extending through said orifice and said aperture, thereby guiding said head into said aperture during said assembly; and

said recess extending around no more than ¾ of the circumference of said aperture at locations other than that portion of said circumference directed toward said orifice.

4,564,307

BALL JOINT

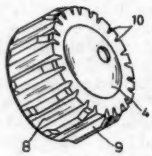
Eiichi Ito, Meerbusch, Fed. Rep. of Germany, assignor to TRW Ehrenreich GmbH & Co. K.G., Dusseldorf, Fed. Rep. of Germany

Filed Oct. 29, 1984, Ser. No. 666,244

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1983, 3341255

Int. Cl.⁴ F16C *11/06*

U.S. Cl. 403—140 **7 Claims**



1. A ball joint comprising:

a housing having a cavity,

a bearing shell located in said cavity, and a ball stud having a head received in said bearing shell,

said bearing shell being made of an elastic material and exerting a radial pressure on said ball head,

said bearing shell having elastically deformable elevations arranged around the circumference of said bearing shell and extending radially between the inner surface of said housing and said bearing shell to exert said radial pressure on said ball head,

said elevations including a plurality of axially extending ribs and bars alternately arranged around said circumference and separated by axially extending grooves in said bearing shell, the circumferential width of said bars being greater than the circumferential width of said ribs, and the radial extent of said ribs being greater than the radial extent of said bars, whereby said bars bear against the housing only in the case of comparatively large loads acting on the joint.

4,564,308

SPRING ROD FOR STRAP

Iwao Ikegami, Nirayama, Japan, and Tooru Mashida, No. 26-16, Miyamae 5 chome, Suginami-ku, Tokyo, Japan (168), assignors to Tooru Mashida, Japan

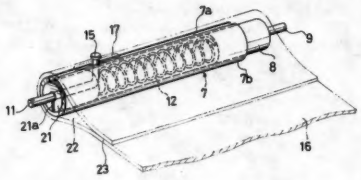
Filed Feb. 25, 1983, Ser. No. 469,707

Claims priority, application Japan, Mar. 8, 1982, 57-31363[U]; Aug. 2, 1982, 57-117581[U]

Int. Cl.⁴ F16B *7/10*

U.S. Cl. 403—166 **5 Claims**

1. A spring rod for a strap, comprising a cylinder having a first projection at one end thereof and a longitudinal slit extending from the other end thereof, a slider which is slidably mounted at the other end of said cylinder and which has a second projection on an outer end thereof, and a biasing spring interposed between said first projection and said slider, wherein said cylinder has a stop for said slider at the other end



thereof, and wherein said stop comprises a pipe which is inserted into said cylinder.

4,564,309

POST, SUCH AS A ROADSIDE MARKING POST, A TRAFFIC SIGN POST OR A LAMP POST

John Björlund, Cederbourgsgatan 6, Göteborg, Sweden (412 55)

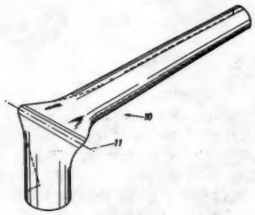
PCT No. PCT/SE82/00398, § 371 Date Jul. 14, 1983, § 102(e) Date Jul. 14, 1983, PCT Pub. No. WO83/01972, PCT Pub. Date Jun. 9, 1983

PCT Filed Nov. 25, 1982, Ser. No. 517,530

Claims priority, application Sweden, Nov. 27, 1981, 8107081

Int. Cl.⁴ E01F *9/01*

U.S. Cl. 404—10 **16 Claims**



1. In a post, such as a roadside marking post, a traffic sign post or a lamp post, of the kind which is self-raising after having been hit by a vehicle and is made from a channel-shaped plastic material profile, the channel-shaped side of which faces away from the direction of impact in use, and which has an upper and a lower end, bending zone and a substantially arcuate cross-section at least along the bending zone, the improvement comprising:

the cross-sectional area of the post has a configuration that increases progressively towards the lower end,

so that upon bending the post away from the direction of impact a flared-out portion is formed having a folding line and the flared-out portion is larger below said folding line than above said folding line,

and thus the inherent resiliency of the material is greater below than above the folding line.

4,564,310

RESILIENT PAVING COMPOSITION FOR PLAYFIELDS SPORTS FIELDS AND RECREATION AREAS

Edmund Thelen, 658 Davis La., Strafford; Daniel N. Black, III, 330 Gulph Hills Rd., Radnor, both of Pa. 19087, and Thomas L. Kiley, 3908 Newport Gap Pike, Wilmington, Del. 19808

Filed Jun. 8, 1984, Ser. No. 618,495

Int. Cl.⁴ E01C *5/02, 5/18, 5/22*

U.S. Cl. 404—31 **4 Claims**

1. A paving system for well-drained soil comprising in combination

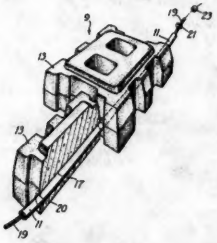
1. a soil covering layer consisting essentially of open graded mineral aggregate having a thickness in the range of from about 2 to about 4 inches;
2. a layer of fibrous scrap vulcanized rubber particles covering layer (1), said layer having a thickness in the range of from about one-half to about 2 inches;
3. a core composition layer covering layer (2), said core composition consisting essentially of from about 70 to 87 weight percent scrap vulcanized rubber fibers bonded with from about 14 to 30 weight percent of a rubber latex selected from the group consisting of natural rubber latex and synthetic rubber latex containing 45–60% rubber solids, said bonded rubber fibers comprising about 45% of the volume of said core composition, the remaining volume being void, said layer having a thickness in the range of from about one-half to about 2 inches, wherein the rubber fibers have a shape wherein the length is at least six times the diameter and have a size range of minus 2 plus 16 mesh (U.S. Sieve Series); and
4. a topping layer covering layer (3) consisting essentially of from about 68–78 weight percent vulcanized rubber particles of from about 12–30 mesh, zinc oxide in an amount from about 1–7 weight percent and bonded with about 25 weight percent of a rubber latex.

4,564,311

PROTECTIVE JACKET FOR USE IN REVETMENT STRUCTURES

John M. Scales, Norcross, Ga., assignor to Nicolon Corporation, Norcross, Ga.

Continuation-in-part of Ser. No. 201,569, Oct. 28, 1980, Pat. No. 4,370,075. This application Jan. 24, 1983, Ser. No. 460,447
The portion of the term of this patent subsequent to Jan. 25, 2000, has been disclaimed.
Int. Cl.⁴ E02B *3/12*; F02D *17/20*
U.S. Cl. 405—20 **3 Claims**



1. A flexible revetment structure, comprising:

(A) A plurality of rectangular precast grids in substantially abutting relationship of staggered interlocking rows, each of said grids having:

(a) two opposed longer sides, each of said longer sides having:

(i) a lower vertical surface;

(ii) an upper sloping surface which slopes inward from the longer side lower vertical surface; and

(iii) a vertical channel;

(b) two opposed shorter sides, each of said shorter sides having:

(i) a lower vertical surface;

(ii) an upper sloping surface which slopes inward from the shorter side lower vertical surface; and

(iii) a vertical channel of depth approximately equivalent to the difference in length between the longer and shorter sides and width sufficient to receive projecting portions of the shorter sides of two like grids in staggered abutting relationship with said grid, said vertical channel having:

(x) two tiers;

(y) lower vertical first and second tier surfaces; and

(z) upper sloping first and second tier surfaces;

(c) a horizontal lower top surface extending around the periphery of the grid;

(d) a horizontal upper top surface raised slightly above the lower top surface; and

(e) a plurality of through tunnels extending horizontally parallel to the larger sides;

(B) a plurality of connecting means extending through the tunnels and interconnecting the grids; and

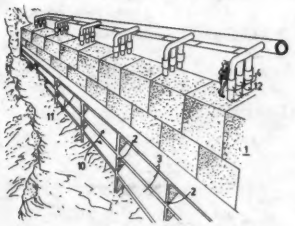
(C) tubing to receive the connecting means, which tubing itself is disposed within the tunnels in the grids, and extends through the revetment structure.

4,564,312

SYSTEM FOR UTILIZING THE ENERGY OF WAVES

Manuel Munoz Saiz, San Emilio, 16, Madrid, Spain

Filed Jun. 3, 1983, Ser. No. 500,630
Claims priority, application Spain, Dec. 14, 1982, 518.197
Int. Cl.⁴ E02B *9/08*
U.S. Cl. 405—76 **8 Claims**



1. A system for utilizing the energy of waves of a body of water comprising a wall, or the like, against which the waves advance, the system comprising a cavity in the wall, or the like, the cavity having an inlet side facing toward the waves and the inlet side of the cavity being shaped and defined such that it may be closed off by the wave water; an air transmitting conduit means connected at the other side of the cavity, and positioned such that the water entering the cavity from the advancing waves driving air from the cavity through the conduit means; a storage tank communicating with the conduit means for receiving the air pushed by the waves and a non-return valve in the conduit means for preventing return of air pushed into the tank by the advancing waves; air driven apparatus; means for directing air from said tank to said air driven apparatus to operate the same.

4,564,313

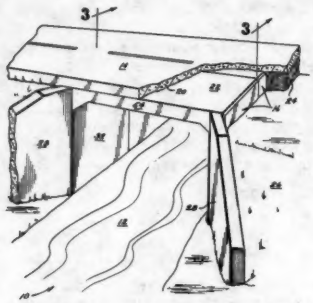
RECTILINEAR CULVERT STRUCTURE

Robert L. Niswander, and Tomy W. Cornwell, both of Findlay, Ohio, assignors to Hyway Concrete Pipe Company, Findlay, Ohio

Filed Sep. 29, 1983, Ser. No. 537,337
Int. Cl.⁴ E01F *5/00*
U.S. Cl. 405—125 **24 Claims**

1. A bottomless concrete culvert assembly comprising, in combination, at least one unitary, rectilinear culvert structure and a pair of footers, said culvert structure having only one substantially planar span and a pair of parallel sidewalls inte-

grally and rigidly formed with and extending substantially perpendicularly from said planar span, one each of said footers



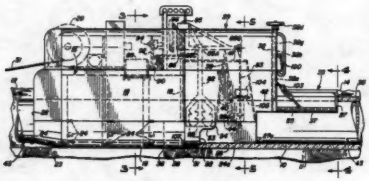
disposed in supporting relationship with a respective one of said sidewalls.

4,564,314

SELF-PROPELLED CONTINUOUS CONCRETE PIPE-LAYING MACHINE

Roger W. Gallagher, Scottsdale, Ariz., assignor to Fullerform, Inc., Phoenix, Ariz.

Filed Apr. 23, 1984, Ser. No. 602,815
Int. Cl.[4] E02D *29/10*
U.S. Cl. 405—155 **1 Claim**



1. A self-propelled continuous concrete pipe-laying machine using a fluid pressure inflatable core comprising:

a guide portion having a semi-cylindrical bottom and vertically disposed sides slidably engaging a mating semi-cylindrical bottom pre-dug trench to receive the pipe,

a laterally disposed vertical baffle fixed to the rear end of said guide portion,

an elongated horizontally disposed arcuate core support member fixed in spaced position from the inside surface of the bottom and sides of said guide portion and extending through a circular opening in said baffle and rearwardly of said baffle so as to define a space between the bottom of said trench and the underside of said core support member for troweling the lower half of the bore of said pipe to be formed,

a hopper fixed to and extending rearwardly of said lateral baffle and located above said core support and troweling member,

a top troweling member fixed to and extending rearwardly of said hopper,

an intermediate transverse partition extending between the sides of said hopper forming a front and rear compartment in said hopper,

a core receiving tunnel in the lower portion of said front compartment communicating with an opening in said transverse baffle and an arcuate cutout in the bottom of said partition.

passageways each side of said tunnel and the sides of said hopper connecting said front compartment to said space below said core support member including a guide portion sloping upwardly and rearwardly from said baffle to said partition each side of and spaced from said core receiving tunnel,

said rear compartment being in direct communication with the top half of said core carried on said core support member upon emergence from said partition cutout and with the top edges of the poured bottom half of said pipe and including a material discharge passageway above said core and top edges for supplying material under said top troweling member upon movement of said machine in the trench,

winch means mounted atop the forward end of the machine comprising a cable connected at one end to the winch means and the other end connected to a deadman,

said winch means comprising a frame detachably mounted on said machine and a hydraulically operated internal combustion engine driven apparatus mounted on said frame,

a deadman for mounting in the pre-dug trench forward of the machine for providing a temporary anchor for the other end of the cable so that the winch means, upon actuation, may wind up the cable, thereby pulling the machine along the trench toward the deadman,

said deadman comprising a pair of plates that are vertically oriented to each other and arranged substantially vertical to the walls of the trench,

lever means forming a jackknife configuration comprising at least a pair of levers pivotally interconnected at common ends and each pivotally connected at its other end to a different one of said plates,

an elongated draw bar connected at one end to said lever means and at the other end to said other end of said cable,

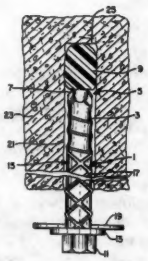
whereby when said bar is pulled on and said jackknife configuration of said lever means is biased toward its straightened position, said deadman will anchor itself to the side walls of the trench.

4,564,315

METHOD FOR ANCHORING A BOLT IN A ROCK-LIKE STRUCTURE

Richard C. Rozanc, R.D. No. 3, McDonald, Pa. 15057

Filed Jul. 5, 1983, Ser. No. 510,580
Int. Cl.[4] E21D *20/02*
U.S. Cl. 405—261 **5 Claims**



1. In a method of anchoring a bolt in a bore hole, having an open end and a closed end, formed in a rock-like structure, wherein the bolt is anchored solely by a resin material, under tension with a flange on the bolt at the open end of the bore hole, the improvement comprising:

inserting into the open end of the bore hole a supply of mixable resin material in a frangible container;

inserting a reinforcing bolt, without mechanical anchoring means, into the open end of said bore hole, which bolt has a helical channel therein adjacent the end so inserted and

a flange at the other end thereof, to move the frangible container towards the closed end of the bore hole;

rotating the reinforcing bolt in a first direction, opposite the direction of the thread of the helical channel of the bolt, to fragment the container and mix the resin, and pump the resin towards the closed end of the bore hole, whereby the resin initiates hardening; and

prior to complete hardening of the resin but after substantial hardening thereof, rotating the reinforcing bolt in the reverse direction, while the resin completely hardens, to anchor the bolt.

4,564,316

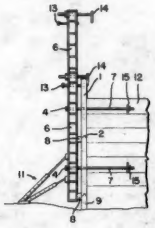
FACE PANEL SYSTEM

Kenneth J. Hunziker, Rte. 3, Box 715, Yakima, Wash. 98901

Filed Nov. 8, 1982, Ser. No. 439,778

Int. Cl.[4] E02D *29/02*

U.S. Cl. 405—262 **13 Claims**



1. A method of constructing a panel-faced fill structure comprising the steps of:

placing successive rows of exposed substantially vertical panel members to form the permanent exposed panel face of said fill structure;

placing a back fill mass against one surface of said successive rows of panels at the rows are placed;

anchoring each of said panels with tieback members extending into the back fill mass of said structure as the successive rows are placed; and

supporting each successive row of panels against the lateral shear and overturning forces of said back fill mass by means of supports cantilevered from the preceding row until said tieback members are held by said back fill mass.

4,564,317

SILO FOR STORING SOLIDIFYING LOOSE MATERIAL, ESPECIALLY FLUE DUST

Ernst-Ove Färber, Hensted-Ulzburg, Fed. Rep. of Germany, assignor to Claudius Peters, Fed. Rep. of Germany

Filed Sep. 23, 1983, Ser. No. 535,035

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1982, 3241150

Int. Cl.[4] B65G *53/48*

U.S. Cl. 406—56 **5 Claims**

1. A silo system characterized by a floor and a ceiling for storing solidifying loose material, especially flue ash, comprising:

a silo enclosing a main storage area with at least one opening in said ceiling of said silo whereby to allow loading material into said silo and having a silo exit in said floor of said silo whereby material is removed;

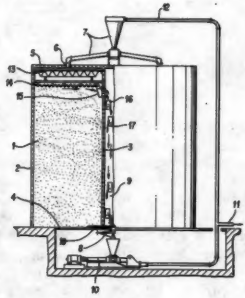
a hollow column located over said silo exit and having in the walls of said column a plurality of slideless openings communicating between said main storage area and the hollow center of said column;

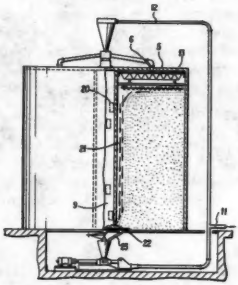
conveyor means adapted and constructed to strip part of said materials from the upper surface of said stored materials and convey said stripped materials to said openings in said hollow column; and

aeration devices located in the main storage area, and beneath each of said openings into said hollow column.

3. A silo system characterized by a floor and a ceiling for storing solidifying loose material, especially flue ash, comprising:

a silo enclosing a main storage area with at least one opening in said ceiling of said silo whereby to allow loading material into said silo and having a silo exit in said floor of said silo whereby material is removed;





a hollow column located over said silo exit and having in the walls of said column a slideless passage opening near the floor communicating between said main storage area and the hollow center of said column;

conveyor means adapted and constructed to strip materials from the upper surface of said materials and convey said stripped materials to said hollow column; and

aeration devices located in said main storage area, and at least one series of aeration devices on the silo hollow column circumference in a helical distribution.

4,564,318

GATE OF THE PIPE-LINE OF A PNEUMATIC CONVEYER USED FOR TRANSPORTING CONTAINERS

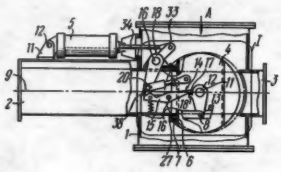
Adolf M. Alexandrov; Jury A. Tsimbler; Vitaly G. Iljukhin; Jury A. Yashin, and Igor V. Kiselev, all of Moscow, U.S.S.R., assignors to Spetsialnoe Konstruktorskoe Bjuro "Transprogress", Moscow, U.S.S.R.

PCT No. PCT/SU82/00022, § 371 Date Jan. 31, 1984, § 102(e) Date Jan. 31, 1984, PCT Pub. No. WO84/00146, PCT Pub. Date Jan. 19, 1984

PCT Filed Jun. 25, 1982, Ser. No. 584,258

Int. Cl.[4] B65G *51/22*

U.S. Cl. 406—192 2 Claims



1. A gate of a pipe-line of a pneumatic conveyer of containers, comprising a body hermetically connected with inlet and outlet branch pipes arranged coaxially relative to each other and connected to the pipe-line of the pneumatic conveyer, which pipe-line accomodates a branch pipe of a cross-section corresponding to the cross-sections of the inlet and outlet branch pipes, is kinematically connected to a turn drive to be connected to the inlet and outlet branch pipes, and carries a flat damper to overlap one of the branch pipes connected to the body, the improvement comprising the damper (6) used for overlapping one of the branch pipes (2) is rigidly secured to the outer wall of the branch pipe (4) disposed in the body (1) and has a ring-like sealing member (7) which is made from a resilient material and whose shape corresponds to the cross-section of the branch pipe (2) to be overlapped, the branch pipe (4) being mounted in the body (1) so that it can swing to a certain extent in a plane perpendicular to the plane of the damper (6) and relative to an axis (8) passing below the longitudinal axis (9) of the inlet (2) and outlet (3) branch pipes, and being provided with a catch (14) of the position of the branch pipe (4) when one of the branch pipes is overlapped, said catch being actuated by the drive (5) turning the branch pipe (4).

4,564,319

FLEXIBLE TUBE FOR CONVEYING A MIXTURE OF A LIQUID AND A SOLID MATERIAL

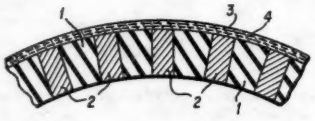
Karel C. van Waveren, Nijmegen, Netherlands, assignor to Vredestein N.V., Velp, Netherlands

Filed Oct. 9, 1981, Ser. No. 310,272

Claims priority, application Netherlands, Oct. 16, 1980, 8005695

Int. Cl.[4] B65G *53/54*

U.S. Cl. 406—193 9 Claims



1. Flexible tube for conveying a mixture of a liquid and solid material containing objects with sharp points, edges or similar projections, the internal wall part of said tube comprising an elastic material, especially rubber, in which a wearproof material is included, wherein the wearproof material is present in the shape of rod-shaped elements, which are provided essentially parallel and at a distance from one another in the internal wall part of elastic material of the tube, in such a way that they extend themselves between the inner and outer surface of this part and in such a way that the distance between any two of said elements is at least as great as the width of any one of said elements, wherein the inner wall part and the rod-shaped elements define a smooth, continuous interior surface.

4,564,320

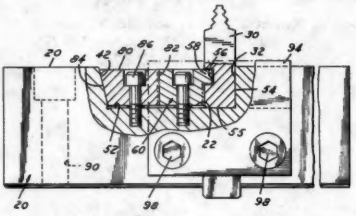
FORM BROACH ASSEMBLY

Robert E. Roseliep, 6 Elmsleigh La., Grosse Pointe, Mich. 48230

Filed Jan. 23, 1984, Ser. No. 575,498

Int. Cl.[4] B23P *15/42*

U.S. Cl. 407—15 2 Claims



1. A slot broaching tool comprising:

(a) a base having means forming an elongate recess having a bottom and a locating wall to receive a plurality of individual broaching teeth in close array,

(b) a plurality of individual broaching teeth in alignment in said recess, each tooth having a cutting end ground to a true form relief,

(c) means to retain said teeth in accurate alignment in said recess against said locating wall,

(d) said means to retain said teeth in accurate alignment in said recess comprising block means to interengage each tooth and force said tooth down to said bottom of said recess and against said locating wall,

(e) each tooth being formed with a base end and a cutting end, said base end having a gauging side to lie in contact with said locating wall of said recess and said base end having a locking side opposite to said gauging side, and said block means comprising a first hold-down block to interengage the locking side of each tooth and a second wedge block to contact the first block and a wall of said recess opposite said locating wall to exert lateral holding force against said locating wall.

4,564,321

END-MILLING CUTTER WITH DRILLING CAPABILITY

Kunio Kondo; Katutoshi Haga, both of Toyota, and Tokunari Takeuchi, Chita, all of Japan, assignors to Fuji Seiko Limited, Aichi, Japan

Filed Apr. 27, 1984, Ser. No. 604,931

Claims priority, application Japan, May 13, 1983, 58-72234[U]

Int. Cl.[4] B23C *5/20*; B23B *51/00*

U.S. Cl. 407—36 20 Claims

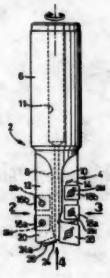
1. An end mill having a drilling capability, and attachable to a rotatable spindle, said end mill comprising:

a generally elongate shank attached to said spindle;

a generally elongate body rotatable about an axis thereof with said shank, and having a proximal end adjacent to said shank and a distal end opposite to said proximal end, said body having two flutes which are formed in a periphery thereof generally in an axial direction thereof and which serve as grooves for removing chips, said two flutes defining a first and a second elongate land extending along said two flutes, said first and second lands having, on one side thereof, a first flute surface and a second flute surface,

respectively, which face in a direction of rotation of said body, said lands having end faces at said distal end of the body;

at least two replaceable peripheral-cutting inserts of generally flat configuration removably fixed on said first and second flute surfaces for effecting a peripheral milling operation, each of said peripheral-cutting inserts having a back face held in contact with the respective one of said first and second flute surfaces, and a front face opposite to said back face, said front face including a peripheral-cutting edge and facing in said direction of rotation, said peripheral-cutting inserts being disposed in a staggered manner alternately in said first and second flute surfaces, and being displaced in said axial direction relative to each other such that cutting paths thereof obtained upon rotation of said body overlap each other in said axial direction and such that one of said peripheral-cutting inserts disposed on said first flute surface is located nearest to said distal end of said body, the peripheral-cutting edges of said peripheral-cutting inserts being located on a circumference of the same assumed cylinder having an axis on said axis of said body;



a replaceable inner drilling insert of generally flat configuration removably fixed on the end face of said first land for cutting a radially inward portion of a hole, said inner drilling insert having a back face held in contact with the end face of said first land and a front face opposite to said back face, said front face including at least one face-cutting edge and being inclined at a smaller angle with respect to a plane perpendicular to said axis of the body, than with respect to a plane parallel to said axis; and

a replaceable outer drilling insert of generally flat configuration removably fixed on said second flute surface for cutting a radially outward portion of said hole, said outer drilling insert having a back face held in contact with said second flute surface, and a front face opposite to said back face, said front face including a face-cutting edge and a peripheral cutting edge and facing in said direction of rotation, said outer drilling insert being located away from said one of the peripheral-cutting inserts on said first flute surface, in said axial direction from said proximal end towards said distal end, such that a cutting path thereof and a cutting path of said one of the peripheral-cutting inserts upon rotation of said body overlap each other in said axial direction, said peripheral-cutting edge being located on the circumference of said assumed cylinder.

4,564,322

DRILL SCOPE

Keith D. Stapley, 8950 E. 33rd Pl., Tulsa, Okla. 74145

Filed Sep. 6, 1983, Ser. No. 529,354

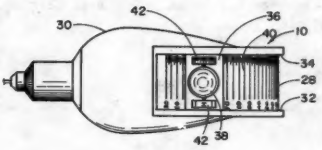
Int. Cl.[4] B23B *49/00*; G01C *9/28*

U.S. Cl. 408—16 **4 Claims**

1. In a hand held drill the specific improvement comprising:

(a) a protractor means attached to said drill wherein said protractor means is a circular calibrated surface on the top back side of said drill and wherein said protractor means is calibrated in degree of tilt such as to correspond to the angle of tilt of the drill bit;

(b) an adjustable indexing means operably engaged to said drill and protractor means such as to be movable through and operative range of angles and be selectively held at one of said angles and wherein said adjustable indexing means is a sliding element operatively engaged to said



circular calibrated surface such as to slide over said circular surface and align a marker on said adjustable indexing means with said calibrations of said circular surface such as to indicate which angle of tilt is selected and wherein said adjustable indexing means is further adapted to hold a bubble spirit level such that said bubble reads level when said drill bit is tilted at said selected angle; and

(c) a bubble spirit level attached to said sliding element of said adjustable indexing means.

4,564,323

SWIRL APPARATUS

Hermann Berbalk, Göppingen, Fed. Rep. of Germany, assignor to Oerlikon-Boehringer GmbH, Göppingen, Fed. Rep. of Germany

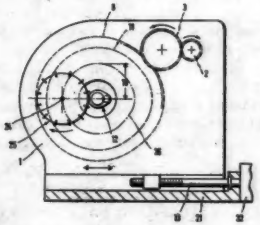
PCT No. PCT/EP83/00103, § 371 Date Dec. 8, 1983, § 102(e) Date Dec. 8, 1983, PCT Pub. No. WO83/03564, PCT Pub. Date Oct. 27, 1983

PCT Filed Apr. 13, 1983, Ser. No. 579,895

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1982, 3213740

Int. Cl.[4] B23C *3/06*

U.S. Cl. 409—200 **10 Claims**



1. An external milling machine for machining a planar shallowly curved or circular contour extending around a longitudinal axis of a workpiece, such as a crankshaft, comprising: a frame, supporting means on said frame for stationarily supporting said workpiece, guide means on said frame extending transversely to said longitudinal workpiece axs, a casing mounted on said guide means, an external cam rotatably mounted in said casing, an internal circular cam rotatably mounted in said external cam, tool means having at least one rotary tool with external cutting edges and being rotatably and eccentrically mounted in said internal cam, first driving means connected to said tool means for rotating the same, second driving means connected to said internal cam for driving the same, third driving means connected to said external cam for driving the

same, and fourth driving means connected to said casing for moving the same along said guide means.

4,564,324

DOWEL

Erich Leibhard, Munich, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Continuation-in-part of Ser. No. 370,483, Apr. 21, 1982, abandoned. This application Sep. 17, 1982, Ser. No. 419,421
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1981, 3116424
Int. Cl.[4] F16B *39/02*
U.S. Cl. 411—3 **10 Claims**

1. An anchor dowel comprising an axially elongated dowel body having a cylindrically shaped outside surface and an axially extending bore, said dowel body having a leading end and a trailing end spaced apart in the axial direction with said bore extending from the leading end to the trailing end, at least an axially extending section of said bore being conically shaped from the leading end toward the trailing end with the conically shaped section diverging in the direction from the leading end toward the trailing end, and an axially elongated spreading element having a leading end and a trailing end spaced apart in the axial direction and including at least an axially extending conically shaped portion extending from the leading end toward the trailing end, and said spreading element arranged to be inserted into the bore for spreading said dowel body radially outwardly, wherein said dowel body is formed of a sintered dry powdered metal, and said dry powdered metal comprises iron and has a weight in the range of 5 to 7 g/cm^3, the outside surface of said dowel body extending axially from the leading end thereof has a plurality of axially extending grooves with the grooves being spaced angularly apart and extending from the leading end of said dowel body for at least a portion of the axial length of said conical section of said dowel body.

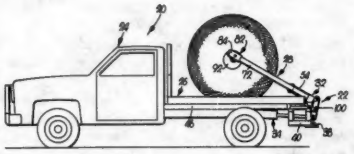
4,564,325

FLUSH-MOUNTED ROUND BALE MOVER FOR TRUCK BEDS

Galen R. Ackerman, R.R. 4, Sabetha, Kans. 66534

Filed Mar. 14, 1983, Ser. No. 475,308
Int. Cl.[4] A01D *87/12*
U.S. Cl. 414—24.5 **6 Claims**

1. Crop bale handling apparatus comprising:
- a platform adapted for attachment to a vehicle above the ground as a load-carrying bed thereof,
- said platform having a normally upper, flat surface;
- a bale lift associated with said platform for loading bales onto and off of said upper surface when the platform is attached to the vehicle and having a pair of elongated, laterally spaced arms; and
- mechanism coupled with said lift for moving the same between an unfolded, operating position in which the lift projects outwardly from the platform, and a folded up, stored position in which the lift at least generally falls within the confines of the platform,
- said mechanism including a power device located below said upper surface of the platform, and said platform having clearance slots in said upper surface which receive said



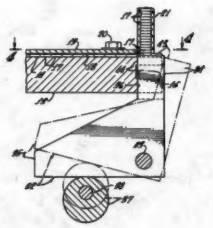
arms into an at least generally flush condition with the upper surface when the lift is in said storage position, whereby to render said upper surface unobstructed by said power device and the arms when the lift is in its storage position.

4,564,326

FEED ARRANGEMENT FOR PICK-AND-PLACE MACHINE

William E. Roberts, Rolling Hills Estates, and Milo Cripps, Manhattan Beach, both of Calif., assignors to Excellon Industries, Torrance, Calif.

Filed Aug. 25, 1983, Ser. No. 526,539
Int. Cl.[4] B65G *59/06*
U.S. Cl. 414—131 **16 Claims**



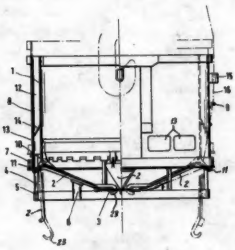
1. A feed arrangement for chips in a pick-and-place machine comprising
- a first guide means having an entrance for receiving chips and means for directing said chips to a predetermined location,
- a second guide means having an outlet for delivering chips one at a time at a location adjacent said entrance,
- a drive member,
- means for pivotally mounting said drive member for rotational movement, said drive member including an unbalanced mass for causing such rotation from a first position to a second position by gravity, said second position being adjacent said entrance,
  - said drive member having a portion thereof adjacent said entrance and engageable with a chip delivered by said second guide means for pushing said chip into said entrance of said first guide means upon such rotational movement of said drive member,
- and means for positioning said drive member in said first position following such rotational movement thereof.

4,564,327

CONTAINER FOR FEEDING ARC FURNACES

Hermann Lünig, Moers, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Apr. 25, 1983, Ser. No. 488,206
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1982, 3216102
Int. Cl.[4] B65G 65/32
U.S. Cl. 414—199 3 Claims



1. A container for feeding an arc furnace having a container element proper and foldable or hinged, bottom segments amenable to assume a closing position but upon release folding down for opening the bottom, the improvement comprising

a container, each of said segments being constructed as a double-arm lever, a second arm in each instance, respectively, extending radially outwardly from a point of hinging;

annular means extending underneath said container element and limiting radial outer displacement of the segments when folded down,

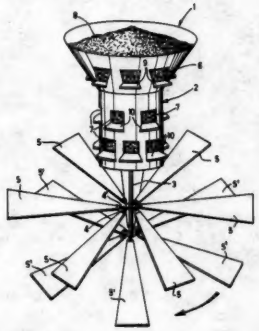
and a separate annular ring which acts upon said radially outwardly extending lever arms, tending to fold the segments up toward closing the bottom of the container.

4,564,328

APPARATUSES FOR THE LOADING OF AN ENCLOSURE WITH A PARTICULATE SOLID

Roben Loutaty, Le Havre, and Yvon Haquet, St Romain de Colbosc, both of France, assignors to Compagnie Francaise de Raffinage, Paris, France

Filed Dec. 29, 1983, Ser. No. 566,570
Claims priority, application France, Dec. 30, 1982, 82 22064
Int. Cl.[4] B65G 65/32
U.S. Cl. 414—301 20 Claims



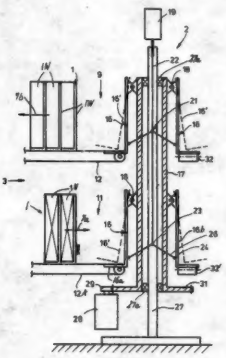
1. An apparatus for loading an enclosure with particulate solids in the form of a dense bed, which comprises a loading hopper for the particulate solids, a discharge chute for the hopper having a discharge end, a motor means, a shaft driven by said motor means and extending substantially parallel to the axis of the discharge chute and out the discharge end thereof, flexible moderately hard deflecting means which are articulated at a first end to the shaft beyond the discharge end of said chute in a manner adapted to provide a second free end of the deflecting means opposite the first end such that the deflecting means diverge angularly from a downward position towards an outward position by the effect of centrifugal force when the shaft is rotated, and at least one side discharge opening in the side of the hopper or in the side of the chute such that particulate solids passing therethrough are directed towards the free ends of the centrifugally extended deflecting means.

4,564,329

APPARATUS FOR MANIPULATING EMPTY AND FILLED TRAYS FOR CIGARETTES OR THE LIKE BETWEEN MAKING AND PROCESSING MACHINES

Jürgen Bantien, Hamwarde, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,514
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1982, 3220588
Int. Cl.[4] A24C 5/352
U.S. Cl. 414—403 25 Claims



1. Apparatus for manipulating receptacles for rod-shaped articles of the tobacco processing industry, particularly for manipulating chargers for cigarettes, comprising a first multi-level unit for filling of the receptacles; a second multi-level unit for evacuating articles from filled receptacles, each of said units having means for storing receptacles at its respective levels; and means for connecting said units, comprising at least one orientation changing device which is rotatable about a predetermined substantially vertical axis and includes at least one carrier at each level of a unit, each of said carriers being arranged to removably support a receptacle and said carriers being indexible about said vertical axis so as to transport receptacles between several storing means of said first unit and the corresponding storing means of said second unit.

4,564,330

SKIP FILLING APPARATUS AND METHOD

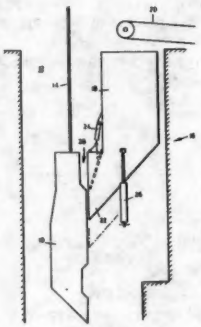
Ronald M. K. McKechnie, 9 8th Ave., Vaal Reefs, Transvaal, and Renier P. Swart, 7 Henley Rd., Orkney, Transvaal, both of South Africa

Filed Aug. 6, 1984, Ser. No. 638,001

Claims priority, application South Africa, Aug. 4, 1983, 83/5704

Int. Cl.[4] B66B *17/26*

U.S. Cl. 414—612 9 Claims



1. A method of filling a skip with material from a loading flask which includes the steps of supporting the flask on hydraulically actuable support means which permits vertical flask movement, discharging material from the flask into the skip, and causing or permitting the flask to move by varying the rate of hydraulic fluid flow from or to the support means in a manner which is dependent on the movement of the skip.

6. A material handling installation which includes a loading flask, a skip which is movable by means of a hoist and which is filled with material from the flask, at least one hydraulically actuable ram which supports the flask, and means for controlling the rate of hydraulic fluid flow to or from the ram thereby to control the movement of the flask while the skip is being filled.

4,564,331

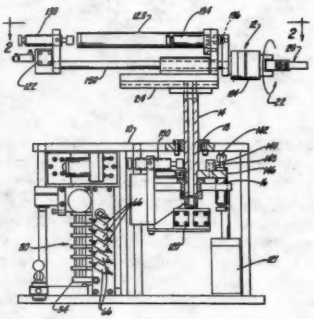
ROBOT

Wendell Karr-Ake, 1422 St. Clair River, Algonac, Mich. 48001

Filed Jan. 17, 1983, Ser. No. 458,479

Int. Cl.[4] B25J *9/00*

U.S. Cl. 414—730 10 Claims



1. In a robot of the type having a housing, a manipulator movable along predefined axes of movement, a drive means associated with each axis of movement for moving, upon actuation, said manipulator along said axis of movement, means for selectively controlling the actuation of each of said drive means comprising:

a drum,

means for rotatably mounting said drum to said housing,

a plurality of cam segments, said cam segments extending circumferentially around said drum,

means for adjustably securing said cam segments to said drum at user selected axially spaced positions along said drum,

a plurality of cam followers secured to said housing at axially spaced positions and adjacent said drum so that said cam followers register with said cam segments,

means associated with each cam follower for actuating a predetermined drive means when said cam follower engages a cam segment,

means for rotatably driving said drum; and

wherein said drum comprises an upper hub and a lower hub, said hubs being spaced apart from each other, a plurality of rods extending between said hubs at circumferentially spaced positions around the axis of said drum, and wherein said cam segment securing means comprises means for securing said cam segments to said rods.

4,564,332

APPARATUS FOR TRANSFERRING A BLANK

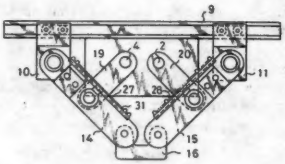
Masaru Orii, Machida, Japan, assignor to Yugengaisha Kyodogiken, Tokyo, Japan

Filed Apr. 2, 1984, Ser. No. 595,820

Claims priority, application Japan, Apr. 25, 1983, 58-71532; Apr. 30, 1983, 58-76585

Int. Cl.[4] B21B *41/06*

U.S. Cl. 414—759 13 Claims



13. An apparatus for transferring a blank comprising:

a first pivoting arm;

a second pivoting arm having its inner end rotatably linked to the inner end of said first pivoting arm;

first and second horizontally moving members adapted to be movable only in the horizontal direction and rotatably supporting the outer ends of said first and second pivoting arms, respectively;

two turnover jigs, one detachably mounted on said first pivoting arm, and one detachably mounted on said second pivoting arm;

two moving jigs, one detachably mounted on said first horizontally moving member, and one detachably mounted on said second horizontally moving member, each of said first and second horizontally moving members provided thereon with a pin, which is formed at its distal end with a mounting portion for mounting the corresponding one of said moving jigs;

a brake and a brake drum which rotatably comes in frictional contact with said brake, and said brake and brake drum being incorporated in each of said first and second horizontally moving members;

pins secured to said brake drums, respectively;

contact pieces attached to said moving jigs, respectively;

stoppers disposed at positions where said stoppers abut on said contact pieces, respectively, when said horizontally moving members are remotest from each other and when they are closest to each other;

a suction retainer mounted on each of said jigs for retaining a blank on the corresponding jig through suction; and

a driving force transmitting means which maintains said first and second pivoting arms at their respective horizontal positions in their inoperative states but draws down said linked inner ends of said first and second pivoting arms in their operative states to a delivery position where said blank is transferred from one of said jigs to the other jig and then returns said first and second pivoting arms to their respective horizontal positions.

4,564,333
FUEL SUPPLY APPARATUS

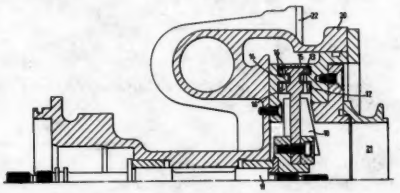
Ernest A. Timby, Camberley; Rodney H. Walsh, Hindhead, and Robert S. Wood, Gosport, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Great Britain

Continuation-in-part of Ser. No. 379,950, May 19, 1982, abandoned. This application Nov. 9, 1983, Ser. No. 550,208

Claims priority, application United Kingdom, May 22, 1981, 8115843

Int. Cl.⁴ F02C *9/04*; B64D *37/32*

U.S. Cl. 415—86 **8 Claims**



1. A device for concurrently pumping and degrading an antimisting additive in a liquid fuel and comprising:

housing means defining an inlet, an outlet, a pumping chamber and an interior chamber establishing fluid communication between said inlet and said outlet,

a fuel pump having an impeller mounted for rotational movement within said interior chamber for urging the liquid fuel to flow from said inlet to said outlet,

stator degrader means including at least one stator flange surrounding said impeller, and

rotary degrader means including at least one rotary flange surrounding said impeller, said at least one rotary flange being interspersed with said at least one stator flange and drivably associated with said impeller so as to rotate relative said at least one stator flange, and wherein

said stator and rotary flanges together include means defining radial passages therethrough which have a length to passage mean diameter ratio of at least one so as to effectively align molecules of said antimisting additive as said fuel passes through said passages by means of said fuel pump to thereby encourage degradation of said additive molecules,

said stator degrader means and said rotary degrader means together cooperating to effect shearing, and thus further degradation of said additive molecules by virtue of the relative rotational movement therebetween whereby said fuel exiting the housing through said outlet is degraded.

8. A method of degrading an anti-misting additive in a hydrocarbon fuel while transferring the fuel from a fuel reservoir to a fuel burner and comprising passing the fuel through a device in the form of a fuel pump having an impeller, a stator array of at least one flange surrounding the impeller and a rotary array of at least one flange surrounding the impeller, the at least one rotary flange being interspersed with the at least one stator flange and drivably associated with the impeller, and the flanges having radial passages therethrough which have a length to mean passage diameter ratio of at least one, whereby with the impeller and associated rotary flanges being rotated with respect to the stator flanges, fuel is pumped through the passages, the additive molecules aligned, stretched and sheared therein, and the burning quality of the fuel retarded.

4,564,334
GUIDE WHEEL FOR MULTISTAGE CENTRIFUGAL PUMPS

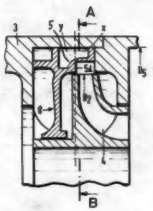
Peter Hergt, Ludwigshafen; Alexander Nicklas, Dirmstein, and Karl-Heinz Becker, Worms, all of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed Apr. 26, 1984, Ser. No. 604,075

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1983, 3315350

Int. Cl.⁴ F04D *29/44*

U.S. Cl. 415—199.3 **15 Claims**



1. In a multistage centrifugal pump, a rotary impeller having means for discharging the conveyed fluid medium; a guide wheel having an outer surface and including a plurality of blades defining passages for the flow of fluid medium from said discharging means, each of said blades having an inner end portion which is remote from said outer surface and includes a tip of the respective blade, and each of said blades further having an outer end portion adjacent to said outer surface, each of said passages having an inlet at the respective tip, and an outlet spaced from the latter, and each of said passages being devoid of constrictions between the respective inlet and outlet, each passage including a first section which extends from the respective tip and diverges laterally and substantially axially of the guide wheel, and a second section disposed downstream of the first section and diverging substantially radially inwardly and axially of the guide wheel; and a housing surrounding said guide wheel.

4,564,335
AXIAL FLOW FAN

Siegfried Harmsen; Georg F. Papst, both of St. Georgen, and Günter Wrobel, Villingen, all of Fed. Rep. of Germany, assignors to Papst-Motoren GmbH & Co. KG, St. Georgen, Fed. Rep. of Germany

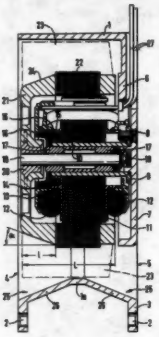
Continuation of Ser. No. 466,642, Feb. 15, 1983, abandoned, which is a continuation-in-part of Ser. No. 140,883, Apr. 16, 1980, Pat. No. 4,373,861. This application Apr. 2, 1985, Ser. No. 718,832

Int. Cl.⁴ F04D *25/08, 29/44*

U.S. Cl. 415—213 C **21 Claims**

1. An axially compact axial-flow fan comprising a fan wheel and a housing casing surrounding said fan wheel over at least substantially the entire axial length of said fan wheel, the fan wheel having a hub with a diameter which is at least half as large as the inner diameter of the housing casing, said housing casing having an inner axially extending cylindrical portion located in the axial central part and being broadened at least toward the exhaust side by way of corner pockets into a regular multicorner profile that circumscribes the diameter of the

fan wheel, said hub of the fan wheel being provided on the inlet side with annular surface means that reduces the diameter on



the inlet portion of said hub, said annular surface means extending at least over one-third of the entire axial length of said hub.

4,564,336

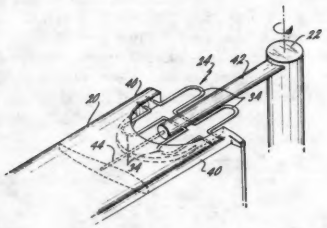
LOW DRAG, BEARINGLESS ROTOR HEAD FOR HELICOPTERS

Evan P. Sampatacos, Cypress, Calif., assignor to Hughes Helicopters, Inc., Culver City, Calif.

Division of Ser. No. 358,248, Mar. 15, 1982. This application Jul. 2, 1984, Ser. No. 627,043

Int. Cl.[4] B64C *27/38*

U.S. Cl. 416—141 **9 Claims**



1. In a helicopter having a hub-to-blade, bearingless coupling, an improvement comprising:

a rotary hub having a plurality of radially extending hub arms;

a blade having a pair of blade shank arms proximate to one of said hub arms;

planar, elastic means for coupling said blade shank arms to said one hub arm, said means being disposed between said pair of blade shank arms and said hub arm and lying generally in a plane of flexure parallel to the plane defined by said hub arms,

wherein said planar elastic means is generally coplanar with said adjacent blade shank arms and has a substantially flat cross section in said plane of flexure to add substantially no additional drag to rotary operations of said hub and blade.

4,564,337

AIRCRAFT PROPELLER

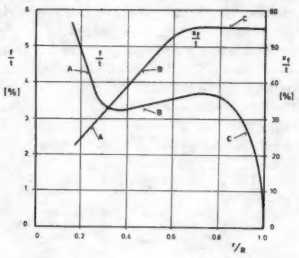
Herbert Zimmer, Friedrichshafen; Ingo Dathe, Immenstaad; Reinhard Hoffmann, Brannenburg; Petr Hora, Stephanskirchen, and Franz X. Wortmann, Böblingen, all of Fed. Rep. of Germany, assignors to Dornier Gesellschaft mit besehränkter Haftung, Friedfrichshafen, Fed. Rep. of Germany

Filed Oct. 11, 1983, Ser. No. 540,493

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1982, 3237518; Mar. 25, 1983, 3310937

Int. Cl.[4] B64C *11/18*

U.S. Cl. 416—223 R **5 Claims**



1. An aircraft propeller blade having a varying profile camber over its length or propeller radius (r/R), said propeller blade comprises three section (A, B, C) of equal or substantially equal length, where the maximum of the camber line (f/t) which extends in the inner section (A), including the hub region, decreases linearly or substantially linearly over the blade length (r/R) towards the blade tip, and the chordwise location of the maximum of the camber line (x_f/t), referred to the blade chord length (t), shifts linearly or substantially linearly towards the trailing edge (5) of the blade; the maximum of the camber line (f/t) which extends in the middle section (B) increases linearly or substantially linearly over the length of the blade (r/R), and the chordwise location of the maximum of the camber line (x_f/t) shifts towards the trailing edge of the blade and follows the course of the inner section (A), referred to the blade chord length (t), linearly or substantially linearly; and the maximum of the camber line (f/t) which extends in the outer section (C) decreases elliptically or substantially elliptically over the length of the blade (r/R), and the chordwise location of the maximum of the camber line (x_f/t) referred to the blade chord length (t) following the middle section (B), remains constant or substantially constant.

4,564,338

HIGH PRESSURE PUMP WITH A FLOW CONTROL VALVE

Rudolf Ilg, Aalen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Apr. 1, 1985, Ser. No. 718,299

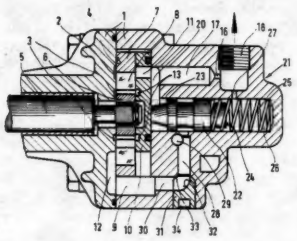
Claims priority, application PCT Int'l Appl., Apr. 6, 1984, PCT/EP84/00102

Int. Cl.[4] F01B *49/00*; F15D *1/04*

U.S. Cl. 417—310 **12 Claims**

1. In a high pressure vane pump of the kind having a housing with a bypass valve for flow regulation wherein a bypass channel combines bypass flow with inlet feed flow from a tank and an angularly related inlet channel communicates with the

suction side of a vane pump, including a flow transition member between opposed open ends of the channels;



the improvement wherein said transition member comprises a plug fitted into said housing and having a groove shaped to form a flow juncture between said opposed ends.

4,564,339

SCROLL COMPRESSOR

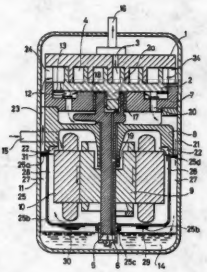
Toshiyuki Nakamura; Tsutomu Inaba, and Tadashi Kimura, all of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1984, Ser. No. 599,356

Claims priority, application Japan, Jun. 3, 1983, 58-99671

Int. Cl.[4] F04B *39/02, 39/06;* **F04C** *18/02;* **H02K** *9/08*

U.S. Cl. 417—366 **12 Claims**



1. In a scroll compressor of a type including a stationary scroll and a motor driven oscillating scroll, said stationary scroll and said oscillating scroll together forming a compression chamber, said oscillating scroll being orbited relative to said stationary scroll, wherein the improvement comprises means for maintaining substantially separate an operating gas and a lubricant of said compressor, said means comprising cover means for said motor, said cover means comprising a boundary between an operating gas flow path and a lubricant flow path, said operating gas flow path including a portion extending interiorally of said cover means.

4,564,340

DEVICE FOR REGULATING THE PRESSURE AND FEED VOLUME OF A DIAPHRAGM PUMP

Friedrich R. R. Stahlkopf, Büchen, Fed. Rep. of Germany, assignor to Abel Pumpen GmbH, Büchen, Fed. Rep. of Germany

Filed Nov. 13, 1984, Ser. No. 670,535

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1983, 3341020

Int. Cl.[4] F04B *43/10*

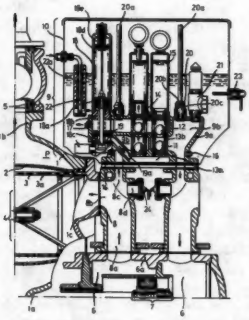
U.S. Cl. 417—388 **10 Claims**

1. In a device for regulating the pressure and feed volume of a diaphragm pump which includes a pumping section adapted to be traversed by a secondary fluid medium being transferred, a working section charged with a primary working fluid medium and coupled to said pumping section by a connecting fitting through which the primary working fluid medium flows, and a diahragm of elastomeric material adapted to be pulsed by the primary working fluid medium and constituting a part of the boundary of a pump chamber, said regulating device further including suction and overpressure valves controlled by the primary working fluid medium in the working section for enabling flow of primary working fluid medium out of and into a reservoir therefor, a pressure regulating valve, an expansion chamber, and a nozzle with a leakage bore for permitting flow of primary working fluid medium into the reservoir from a first portion of the regulating device which is separated from the working section by the overpressure valves;

the improvement comprising that:

(a) said regulating device includes a second portion which is in direct and uninterrupted communication with an associated working section of said pump, and a second nozzle with a leakage bore is arranged at said second portion of said regulating device and establishes communication between said second portion of said regulating device and said reservoir,

(b) a recovery channel having at inlet opening in communication with said reservoir leads from said inlet opening to said suction valves, and a throttling device is associated with said inlet opening for controlling the same, said



throttling device including an operating chamber having at one part thereof an access opening which is in communication with said first portion of said regulating device, a piston fluid-tightly slidable in said operating chamber and having first and second faces directed, respectively, toward and away from said access opening, a throttle element arranged at said inlet opening and mechanically rigidly connected with said piston, and a biasing spring bearing on said second face of said piston and having associated therewith means for adjusting the biasing force, said spring being operable normally to bias said throttle element away from said inlet opening to maximize the open area thereof, and said piston being operable, upon being displaced in said operating chamber against the force of said spring by primary working fluid medium acting on said first face of said piston via said access opening, to displace said throttle element so as to progessively reduce the open area of said inlet opening, and

(c) a gas charging device communicates with said second portion of said regulating device, said gas charging device including an entrance opening to said second portion of said regulating device, a normally closed spring-biased gas-admitting valve controlling said entrance opening, and an intake pipe located in said reservoir and extending from said gas-admitting valve to a point higher than the highest permissible level of primary working fluid medium in said reservoir, said gas-admitting valve being

operable to open and enable gas from the interior of said reservoir to be drawn into said second portion of said regulating device to compensate at least partially for losses of primary working fluid medium from said working section.

4,564,341

FUEL INJECTION PUMP FOR AN INTERNAL COMBUSTION ENGINE

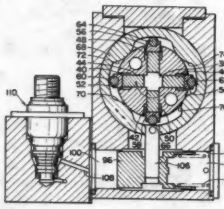
Toshiaki Tanaka, Chigasaki, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 2, 1984, Ser. No. 606,266

Claims priority, application Japan, May 4, 1983, 58-78804

Int. Cl.⁴ F04B *19/02*

U.S. Cl. 417—462 **7 Claims**



1. A fuel injection pump for an internal combustion engine provided with a fuel injection valve, comprising:

(a) a rotary distributor rotating in synchronism with engine revolution;

(b) a cam ring encircling the rotary distributor and having an inner surface formed with two or more cam protrusions; and

(c) two or more plungers equal in number to the cam protrusions and mounted on the rotary distributor for rotation in accordance with rotation of the rotary distributor, the plungers defining a common pumping chamber and engaging the inner surface of the cam ring for reciprocation in the radial direction with respect to the rotary distributor to pump fuel out of said common pumping chamber into the injection valve;

at least one of the cam protrusions having a cam lift profile different from those of the other cam protrusions so that the sum of the cam lift profiles of the cam protrusions determining fuel injection rate differs in shape from each of the cam lift characteristics, wherein:

said plungers are arranged radially, said cam protrusions are arranged around said cam ring, and said difference in cam lift profile includes a slight uneven angular offset of one of said cam protrusions with respect to the other cam protrusions; and

said offset cam protrusion engages one of said plungers before the other cam protrusions engage the other plungers, and said offset cam protrusion has less angular extent that said other cam protrusions.

4. A fuel injection pump for an internal combustion engine provided with a fuel injection valve, comprising:

(a) a rotary distributor rotating in synchronism with engine revolution;

(b) a cam ring encircling the rotary distributor and having an inner surface formed with two or more cam protrusions; and

(c) two or more plungers equal in number to the cam protrusions and mounted on the rotary distributor for rotation in accordance with rotation of the rotary distributor, the plungers defining a common pumping chamber and engaging the inner surface of the cam ring for reciprocation in the radial direction with respect to the rotary distributor to pump fuel out of said common pumping chamber into the injection valve;

at least one of the cam protrusions having a cam lift profile different from those of the other cam protrusions so that the sum of the cam lift profiles of the cam protrusions determining fuel injection rate differs in shape from each of the cam lift characteristics, wherein:

said plungers are arranged radially, said cam protrusions are arranged around said cam ring, and said difference in cam lift profile includes a slight uneven angular offset of one of said cam protrusions with respect to the other cam protrusions; and

said offset cam protrusion engages one of said plungers before the other cam protrusions engage the other plungers, said inner surface of the cam ring defines an outermost base circle, and said offset cam protrusion has a radial dimension with respect to the base circle less than the corresponding radial dimensions of said other cam protrusions.

4,564,342

PERISTALTICALLY OPERATING ROLLER PUMP AND PUMP ROTOR THEREFOR

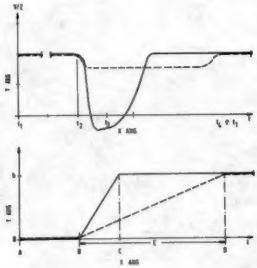
Wolfram Weber, Spiesen-Elversberg; Hans-Jürgen Neumann; Artur Meisberger, both of St. Wendel, and Bernd Mathieu, Spiesen-Elversberg, all of Fed. Rep. of Germany, assignors to Fresenius AG, Fed. Rep. of Germany

Filed Jul. 24, 1984, Ser. No. 633,804

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1983, 3326786

Int. Cl.⁴ F04B *43/12, 45/08*

U.S. Cl. 417—477 **11 Claims**



1. Peristaltically operating roller pump, comprising:

(a) a pump rotor,

comprising a drive member which is rotatably drivable by means of a drive shaft of the pump, and

rollers which are distributed symmetrically over the periphery of the drive member and are mounted on roller carriers which are radially outwardly loaded by springs bearing on the drive member, the roller carriers being coupled together via a connection, said connection being independent from said drive shaft which guides the roller carriers symmetrically with respect to the drive shaft, and

(b) a pump bed,

comprising a bottom surface disposed parallel to the rotation plane of the pump rotor;

a bearing wall extending continuously upright with respect to the bottom surface, the bearing wall comprising a working region in which the bearing wall is made arcuate and concentric with the axis of rotation of the pump rotor and in which a pump hose can be placed in order to be subjected to the action of the rollers of the pump rotor, and an exit region in which the bearing wall drops back from the circular path of the rotor,

characterized in that the connection between the roller carriers converts a constrained radial movement of one roller into a corresponding follow-up movement of the other roller carrier.

4,564,343

SCROLL COMPRESSOR HAVING IMPROVED SEALING

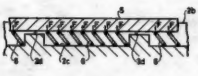
Toshiyuki Nakamura; Masahiro Sugihara; Tsutomu Inaba, and Tadashi Kimura, all of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 13, 1984, Ser. No. 630,603

Claims priority, application Japan, Jul. 30, 1983, 58-139573; Nov. 15, 1983, 58-216761

Int. Cl.[4] F04C *18/04, 27/00*

U.S. Cl. 418—55 1 Claim



1. A scroll compressor having improved sealing, comprising:

(a) a fixed scroll comprising a spiral wrap projecting from an end plate;

(b) an orbiting scroll comprising a spiral wrap projecting from an end plate, said fixed and orbiting scrolls being assembled together to form compression chambers between said fixed scroll and said orbiting scroll, a fluid introduced into said compression chamber being compressed toward a center portion of said fixed and orbiting scrolls and discharged through a discharge port formed at said center portion as said orbiting scroll undergoes an orbiting motion with respect to said fixed scroll, a groove being formed in end surfaces of said spiral wraps of each of said fixed and orbiting scrolls adjacent the end plate of the other scroll;

(c) seal members having generally the same shape as said grooves and being inserted in said grooves of said fixed and orbiting scrolls;

(d) each said groove of each of said fixed and orbiting scrolls being longitudinally divided into a plurality of groove portions by partitions, each partition having a height less than the depth of the groove, the partitions being widely spaced apart and relatively small such that the groove portions between partitions constitute nearly the entirety of the groove; and

(e) a plurality of longitudinally aligned helical springs, one in each groove portion filling the groove portion from end to end; the turns of said springs abutting said seal member inserted in said groove and applying a force thereto which is directed outwardly from said groove bottom and is substantially uniform over the length of said seal member.

4,564,344

ROTARY COMPRESSOR HAVING ROTARY SLEEVE FOR ROTATION WITH VANES

Hiroshi Sakamaki, Utsunomiya; Susumu Sugishita, Hanyu, and Yukio Horikoshi, Kazo, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1983, Ser. No. 559,805

Claims priority, application Japan, Dec. 11, 1982, 57-216294

Int. Cl.[4] F04C *18/348*

U.S. Cl. 418—173 13 Claims

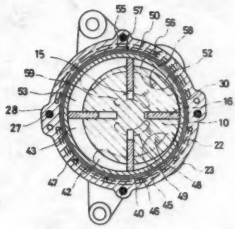
1. A rotary compressor comprising

a center housing and front and rear side housings,

a rotary sleeve mounted for rotation in said center housing,

a rotor eccentrically disposed in said rotary sleeve, said rotor having a plurality of vanes radially, movably fitted therein,

an air-bearing room disposed between the inner periphery of said center housing and the outer periphery of said rotary sleeve, and a pair of discharge and suction chambers, said compressor comprising at least one high-pressure passage formed in the compression side of said center housing and



internally connected to air compressed in said rotary compressor, and

a plurality of throttles communicating with the compression side, inner periphery of said center housing from said high-pressure passage, said high pressure passage forming a circular arc having a subtended angle of less than 170 degrees, whereby said air-bearing room is supplied with air compressed in said rotary compressor to floatingly support said rotary sleeve.

4,564,345

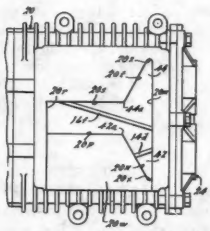
SUPERCHARGER WITH REDUCED NOISE

Robert S. Mueller, Birmingham, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 4, 1984, Ser. No. 647,072

Int. Cl.[4] F01C *1/24*

U.S. Cl. 418—206 18 Claims



1. In a rotary blower of the backflow-type including a housing, inlet and outlet Ports having longitudinal and transverse boundaries formed by wall surfaces defined by the housing, and a chamber defined by the housing; first and second meshed lobed rotors disposed in the chamber for transferring volumes of relatively low-pressure inlet port air via spaces between adjacent, unmeshed lobes to relatively high pressure outlet port air; means for controlling the rate at which outlet port air backflows into the transfer volume; the improvement comprising:

first and second expanding orifices disposed on transversely opposite sides of the outlet port and defining the control means, said orifices defined by transverse wall extensions of the outlet port wall surfaces and traversing of the transverse wall extensions by the lobes prior to traversal of the outlet port boundaries, and said expanding orifices alter-

nately operative at predetermined rotor speeds and pressure differential relationships to maintain a substantially constant backflow rate into each of the transfer volumes.

4,564,346

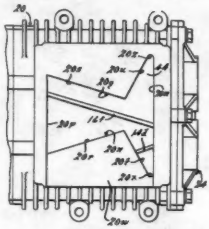
SUPERCHARGER WITH HOURGLASS OUTLET PORT

D. L. Kimmons, Clawson, and Daniel Russell, Detroit, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 4, 1984, Ser. No. 647,071

Int. Cl.⁴ F01C *1/24*

U.S. Cl. 418—206 **11 Claims**



1. In a rotary blower of the backflow-type including a housing, inlet and outlet ports having longitudinal and transverse boundaries, and a chamber defined by the housing; first and second meshed lobed rotors disposed in the chamber for rotation about longitudinally extending and transversely spaced apart axes with the rotor lobes being formed with a helical twist and being operative to traverse the boundaries for transferring volumes of relatively low-pressure inlet port air via adjacent unmeshed lobes to relatively high-pressure outlet port air; the improvement comprising:

first and second spaced apart wall surfaces extending transverse to the rotor axes and defining the longitudinal boundaries of the outlet port; and

third and fourth spaced apart wall surfaces extending between the first and second wall surfaces and defining the transverse boundaries of the outlet port, said third and fourth wall surfaces including portions convergently extending from the first wall surface toward the second wall surface and portions convergently extending from the second wall surface toward the first wall surface with the portions of each wall surface intersecting at positions between the first and second wall surfaces, whereby the outlet port defined by said wall surfaces is somewhat hourglass in shape.

4,564,347

CONTINUOUS EXTRUSION APPARATUS

Anthony J. Vaughan, Challock, Near Ashford, England, assignor to Babcock Wire Equipment Limited, Ashford, England

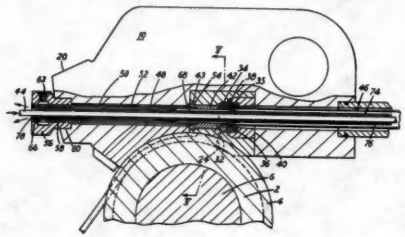
Filed Apr. 12, 1984, Ser. No. 599,328

Claims priority, application United Kingdom, Apr. 12, 1983, 8309875

Int. Cl.⁴ B21C *23/30, 29/00*

U.S. Cl. 425—79 **1 Claim**

1. Continuous extrusion apparatus having a rotatable wheel formed with two identical circumferential grooves, arcuate tooling with portions bounding radially outer portions of the respective grooves provided with exit apertures extending in a generally radial direction from the respective grooves to a single chamber and abutments displaced in the direction of rotation from the apertures extending into the grooves, characterized in that the exit apertures extend through a die top from the respective grooves to a substantially toroidal chamber around a portal mandrel discharging a tubular extrusion product axially of the mandrel through a die orifice of uninterrupted annular cross-section intermediate the mandrel and a die body wall, a tubular shroud comprising a forward portion, an intermediate portion and a rear end portion, the intermediate portion having an increased wall thickness in relation to the wall thickness of both the forward portion and the rear end portion and being positioned internally co-axially of the mandrel and formed with alternating axially extending lands and grooves, the lands seating on the interior of the mandrel and the grooves providing a plurality of parallel cooling fluid flow passages, an outer sleeve extending co-axially externally of the rear end portion of the shroud and having an internal diameter equal the internal diameter of the mandrel secured to a rear end portion of the mandrel to form a first cylindrical passage intermediate the outer sleeve and the shroud, a spigot secured to the end of the outer sleeve by a fluid tight joint remote from the mandrel and seating in the arcuate tooling, the spigot being formed with a cooling fluid inlet tapping communicating with the said first cylindrical passage, the forward portion of the shroud extending internally co-axially of, and radially spaced



from, a portion of the hollow portal mandrel adjacent and beyond the extrusion orifice and around a continuous core member supplied to the extrusion orifice respectively to form a second cylindrical passage intermediate the tubular extruded product and the forward portion of the shroud and a third cylindrical passage intermediate the forward portion of the shroud and the continuous core member, the said third cylindrical passage extending rearwardly intermediate the intermediate portion of the shroud and the continuous core member and intermediate the rear end portion of the shroud and the continuous core member to a cooling fluid exit at a rear face of the spigot, thereby forming a cooling fluid path extending from the cooling fluid inlet tapping through the first cylindrical passage, the grooves in the intermediate portion of the shroud, the second passage and the third passage to the cooling fluid exit, and swaging means positioned forwardly of the forward end of the shroud arranged to swage down the tubular extrusion product on to the continuous core member.

4,564,348

MACHINE BASE FOR INJECTION MOLDING MACHINE

Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Nov. 22, 1982, Ser. No. 443,645

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1981, 3145972

Int. Cl.⁴ B29C *45/84*

U.S. Cl. 425—151 **8 Claims**

1. In an injection molding machine having a machine base, a parts discharge conveyor arranged in said machine base and a horizontally oriented die closing unit of which a stationary die carrier member with a stationary die half of an injection molding die is mounted on top of the machine base, near the center of the latter, and a movable die carrier member with a movable die half of said injection molding die is guided for horizontal opening and closing movements along the longitudinal center axis of the die closing unit by means of longitudinal guide members, and where the piston rod of a longitudinally oriented hydraulic cylinder assembly is connected to said movable die

carrier member to produce its opening and closing movements, the weight of the die closing unit is supported on a forward portion of the machine base, while a rearward portion thereof is adapted to support an associated injection unit, and the injection-molded parts are discharged from the open die halves onto said parts discharge conveyor, the improvement in the machine base comprising:

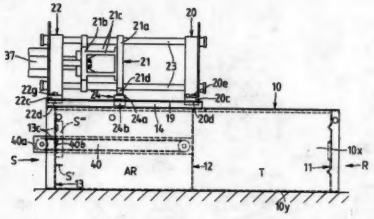
a substantially rectangular horizontal bottom wall;

two continuous, substantially rectangular vertical longitudinal side walls adjoining the bottom wall on opposite longitudinal edges thereof;

a substantially rectangular vertical front end wall transversely connecting the bottom wall and the two side walls near one longitudinal extremity thereof;

a substantially rectangular vertical rear end wall transversely connecting the bottom wall and the two side walls near the other longitudinal extremity thereof; and

a substantially rectangular vertical partition wall transversely connecting the bottom wall and the two side walls at a place which is located underneath the stationary die carrier member; and wherein



said constituent walls are of steel sheet and welded together to form a block-shaped, elongated container-like structure of high resistance against torsional deformation, the machine base defining an upwardly open reservoir chamber between the rear end wall and the partition wall and a likewise upwardly open forward chamber between the front end wall and the partition wall, said forward chamber being inaccessible from the longitudinal sides of the machine base, at least in the area underneath the injection molding die of the die closing unit;

the front end wall has a parts discharge opening for the arrangement of said parts discharge conveyor in the forward chamber of the machine base in such a way that the discharge extremity of said conveyor protrudes forwardly from said opening in the front end wall while being supported by the latter;

the front end wall is located at such a longitudinal distance from the injection molding die that manual access to the injection molding die through the parts discharge opening is impossible; and

the front end wall includes means for adjusting the height of said parts discharge conveyor which extends through its parts discharge opening.

4,564,349

EXTRUDER ASSEMBLY FOR EXTRUDING WATER-CURABLE SILANE MODIFIED POLYMERS

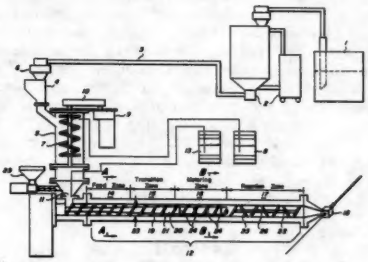
Geoffrey D. Brown, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 498,341, Jun. 1, 1983, Pat. No. 4,489,029. This application Apr. 27, 1984, Ser. No. 603,143

Int. Cl.⁴ B29B *1/06*

U.S. Cl. 425—207 **3 Claims**

1. An extruder assembly, suitable for admixing and reacting a composition containing a silane and a thermoplastic polymer to form a water-curable, silane modified thermoplastic polymer and for extruding said silane modified polymer, comprising a cylindrical barrel housing and a rotating compression screw mounted within said barrel housing, the channel depth defined between the root diameter of said compression screw and said cylindrical barrel housing being substantially constant, uniformly decreasing and being substantially constant thereby defining in sequence, a feed zone, a transition zone and a metering zone, the portion of said cylindrical housing which, in conjunction with said compression screw defines the feed zone being axially grooved and that portion of the rotating compression screw in the metering zone having mixing pins extending substantially perpendiculary therefrom, a mixer, mounted at the terminal end of said rotating compression screw for receiving material from said metering zone, defining a reaction zone wherein the reaction between the silane and the



thermoplastic polymer is substantially completed and from which zone the reacted product is fed into an extrusion die positioned at the terminal end of said reaction zone, said mixer comprising a series of vanes on a stationary shaft mounted in a cylindrical barrel housing or said mixer is a dynamic device mounted to and rotating with said rotation compression screw comprising a rotating screw defining, in conjunction with the cylindrical barrel of the extruder assembly, a channel depth greater than the channel depth of said metering zone and means to rotate said rotating compression screw whereby material is fed through said feed zone, transition zone, metering zone and reaction zone and into and out of said extrusion die.

4,564,350

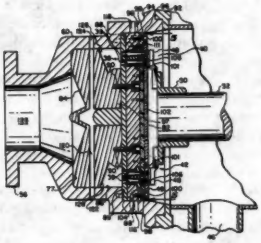
PLASTIC EXTRUDER ASSEMBLY

George Holmes, W. Chicago, and Frank Keyser, Streamwood, both of Ill., assignors to Thomas R. Vigil, Barrington, Ill.

Continuation of Ser. No. 386,873, Jun. 10, 1982, abandoned. This application Mar. 22, 1985, Ser. No. 715,058

Int. Cl.⁴ B29F *3/04, 3/08*

U.S. Cl. 425—313 **12 Claims**



1. In a plastic extruder assembly of the type having an extruder barrel assembly and an extruder die chamber in the distal end of said extruder barrel assembly, said die chamber having means for receiving and mounting a die assembly therein, a die assembly in said die chamber, said die assembly

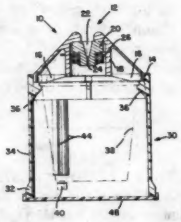
having extrusion orifices extending therethrough and an outer face, the improvement comprising: insulating means beneath said outer die face at least in the area of said die orifices for inhibiting if not altogether preventing freezing of the plastic in said die orifices; said die assembly comprising an annular die ring having die orifices extending therethrough; a die plate defining said face and having die inserts defining said orifices, extending therethrough; a die mounting ring extending peripherally about said die ring; said die ring including means for conveying hot fluid to and around said annular die ring and adjacent but spaced from said inserts to maintain the ambient temperature surrounding said die inserts at an elevated level thereby to keep the plastic passing therethrough molten, whereby said insulating means aid in maintaining said elevated temperature of said annular die ring which surrounds said die inserts, said conveying means comprising an outer annular passageway in said die ring, an inner annular passageway in said die ring, and radial passageways in said die ring situated between adjacent die inserts in said die ring and extending between said inner and outer annular passageways; said insulating means comprising an annular ring of insulating material which is disposed between said die plate and said die ring and which is of pressed asbestos and extensions of said die inserts extending through said annular ring of insulating material to said die insert extensions in said die plate.

4,564,351

DEVICE FOR SHAPING THE TIP OF A SOFT WAX MARKER

Gayle M. LaRue, 29846 45th Pl. South, Federal Way, Wash. 98002, and William A. Munday, 6503 57th Ave. Northeast, Seattle, Wash. 98115

Filed Jun. 15, 1984, Ser. No. 621,164
Int. Cl.⁴ B29C *33/02*
U.S. Cl. 425—383 **8 Claims**



1. A device for shaping the end of a soft wax marker, comprising:

a vertically oriented housing having a lower section and a removable top section, the top section having a central opening therein and the lower section being sized to receive an upwardly opening disposable receptacle therewithin;

a heat-conductive member mounted in the top section, the heat-conductive member having a substantially vertically oriented, internal, conically shaped cavity tapered along its length, with the larger diameter of the cavity being toward the top of the top section and communicating with the opening in the top section;

a relatively small opening in the heat-conductive member located at the bottom of the conically shaped cavity for draining melted wax and sized to permit the free gravity flow of the melted wax therethrough for removal of the melted wax from the cavity;

an electric heater for heating the heatconductive member to a temperture sufficient to partially melt the wax marker for shaping the tip thereof; and

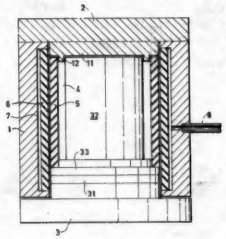
means for positioning and removably holding the disposable receptacle within the lower section and beneath the heat-conductive member with the opening of the receptacle in registration with the opening located at the bottom of the conically shaped cavity for receiving melted wax dripping from the opening, the lower section having an open upper end for removal therethrough of the receptacle when the top section is removed from the lower section.

4,564,352

APPARATUS FOR COMPENSATING AXIAL STRAIN IN AN ISOSTATIC PRESS

Ola Pettersson, Höganäs, Sweden, assignor to KB Cold Isostatic Press Systems CIPS, Höganäs, Sweden

Continuation of Ser. No. 548,082, Nov. 2, 1983, abandoned. This application Feb. 8, 1985, Ser. No. 699,500
Claims priority, application Sweden, Nov. 9, 1982, 8206359
Int. Cl.⁴ B30B *5/02, 11/02*
U.S. Cl. 425—405 H **16 Claims**



1. Apparatus for compensating axial strain in an isostatic press during pressurization, said isostatic press acting against a moulding tool enclosed in a dry pressing chamber of the isostatic press, a mould cavity of the moulding tool being defined in the isostatic press by an elastomeric enveloping wall, a core member and two rigid end walls meeting said elastomeric enveloping wall, the dry pressing chamber of the isostatic press being defined by a radially deformable elastomeric jacket, exercising pressure against the enveloping wall of the moulding tool, and two press end structures associated with the jacket, which carry the rigid end walls of the moulding tool, wherein at least one rigid end wall is carried by an adjacent end structure via an elastomeric element and in that the elastomeric element is disposed with its peripheral edge exposed to, and lying adjacent the deformable elastomeric jacket of the pressing chamber; the elastomeric element compensating for the axial strain of the isostatic press so as to prevent relative movement between the elastomeric enveloping wall and a pressed body in the mold cavity.

4,564,353

CONTINUOUS VULCANIZATION AND/OR CROSS-LINKING APPARATUS

Gerald Smart, deceased, late of Whitefield, England (by Doris M. Smart, administratrix), assignor to General Engineering Radcliffe 1979 Ltd., Manchester, England

Filed Aug. 27, 1980, Ser. No. 181,743
Claims priority, application United Kingdom, Sep. 1, 1979, 7930380
Int. Cl.⁴ B29F *3/10*
U.S. Cl. 425—446 **8 Claims**

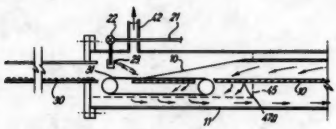
1. Apparatus for continuous vulcanizing and/or cross-linking comprising

elongated tube means open at its ends to permit passage therethrough of a continuous length of product to be vulcanized and/or cross-linked, said tube means being of generally straight configuration and generally horizontal orientation,

a surrounding shell in which said elongated tube means is positioned such that the open ends of the tube means open into the interior of said shell,

means for substantially continuously supplying an elastomeric or polymeric product to be treated such that the product to be treated will pass into said shell and through the tube means and thence out of said shell, and

circulating means communicating with said tube for circulating a vulcanizing treatment liquid through the wall of the tube means into the tube means intermediate its ends at a rate sufficient to completely fill the tube means at least apart from its ends, but insufficient to submerge the ends of the tube means by treatment liquid in the surrounding shell,



said shell being positioned to receive the treatment liquid issuing from the ends of the tube means,

drain means having a drain inlet opening into said shell at a location relatively lower than said tube means for removing treatment liquid from the shell to maintain the ends of the tube means unsubmerged by treatment liquid in the shell,

said circulating means comprising a reservoir,

said reservoir being positioned for receiving treatment liquid which drains from said shell through said drain means.

4,564,354

ANGLE PIECE FOR DENTAL PURPOSES

Otto Rosenstatter, Seeham, Austria, assignor to Dentalwerk Büroos Gesellschaft m.b.H., Bürmoos, Austria

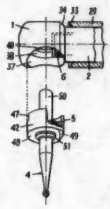
PCT No. PCT/AT83/00028, § 371 Date May 16, 1984, § 102(e) Date May 16, 1984, PCT Pub. No. WO84/01099, PCT Pub. Date Mar. 29, 1984

PCT Filed Sep. 19, 1983, Ser. No. 616,227

Claims priority, application Austria, Sep. 21, 1982, 3509/82

Int. Cl.⁴ A61C *1/12*

U.S. Cl. 433—133 **8 Claims**



1. Angle piece for dental purposes comprising a head shaft, a head part, and a tool with cylindrical tool shaft, which tool is supported in the head part transversely relative to the drive axis of the head shaft, said tool securely connected with its drive gear wheel and interchangeable together with the latter, characterized in that a head bearing (42) is rotatably and axially immovably connected with said tool (4), wherein said head bearing is stationary when inserted in said head part, and in that an outer screw sleeve (29) which is axially displaceable on the head shaft (2) partly overlaps said head bearing (42) in its inserted position.

4,564,355

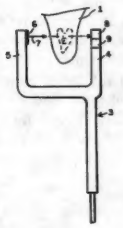
METHOD AND APPARATUS FOR THE NON-INVASIVE EXAMINATION OF THE TOOTH-JAW STRUCTURE OF A PATIENT TO DETERMINE THE CHARACTERISTICS OF UNERUPTED TEETH AND TO CONTROL NUTRITIONAL INTAKE PURSUANT THERETO

Harry A. Traiger, and Mark A. Traiger, both of New York, N.Y., assignors to Dentonaut Lab, Ltd., New York, N.Y.

Filed Jan. 9, 1984, Ser. No. 569,459

Int. Cl.⁴ A61C *5/00*

U.S. Cl. 433—215 **25 Claims**



1. Apparatus for the non-invasive examination of the tooth-jaw structure of a patient to determine the characteristics of unerupted teeth in said structure, said apparatus comprising means for producing a beam of energy support means for said beam producing means for positioning the same such that the beam of energy strikes the tooth-jaw structure and undergoes modification depending on the presence of unerupted teeth and their size and position in the tooth-jaw structure, receiver means on said support means for receiving the beam of energy after striking the tooth-jaw structure or after re-radiation by the tooth-jaw structure to produce the characteristics of unerupted teeth in said structure, and locator means coupled to said receiver means for producing an indication of the location of said receiver means such that the characteristics of the unerupted teeth are related spatially.

4,564,356

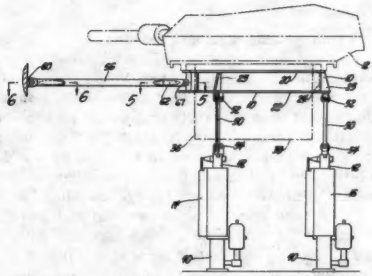
LABORATORY TURRET SHAKER

Clarence H. Winfree, Macomb County, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 18, 1985, Ser. No. 713,069

Int. Cl.⁴ G09B *9/04*

U.S. Cl. 434—29 **10 Claims**



1. A tank turret shaker mechanism comprising an annular platform sized to receive a turret; said platform having an opening therein to accommodate a circular basket depending from the turret; said platform occupying a horizontal plane when the turret has a level attitude; a first anchorage structure

spaced laterally from said platform; a second anchorage structure spaced laterally from said platform; said platform and anchorage structures occupying a common horizontal plane when the turret has a level attitude; a first elongated stabilizer link extending from the platform to the first anchorage structure; a second elongated stabilizer link extending from the platform to the second anchorage structure; said stabilizer links being oriented at right angles to each other in a common horizontal plane when the turret has a level attitude; said first stabilizer link being located on an imaginary line representing the longitudinal axis of the tank designed to receive the turret; said second-stabilizer link being located on an imaginary line representing a pitch axis for the tank; three platform support structures spaced equidistantly around the platform; one of said platform support structures being located on the aforementioned longitudinal tank axis; each platform support structure comprising an upright fluid cylinder means located substantially directly below a section of the platform, and a support link extending upwardly from the fluid cylinder to the platform; each support link being oriented vertically when the turret has a level attitude.

4,564,357

PULLEY ASSEMBLY

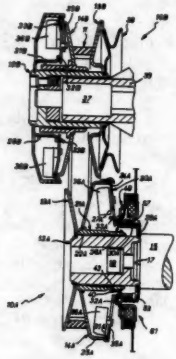
Jacques Thirion de Briel, Levallois-Perret, France, assignor to Valeo, Paris, France

Filed Jul. 23, 1982, Ser. No. 401,333

Claims priority, application France, Jul. 31, 1981, 81 14925

Int. Cl.⁴ F16H *11/06*

U.S. Cl. 474—14 **28 Claims**



1. A pulley assembly suitable for use in a variable transmission drive system for an automobile vehicle, said pulley assembly comprising a rotatable shaft, two flanges keyed to said shaft so as to rotate therewith, at least a first of said flanges being mounted so as to move axially relative to said shaft between two extreme positions, namely a retracted position and an advanced position, a varaiable transmission device disposed axially between and in contact with said flanges and being movable radially relative to said flanges, said first flange being in a first of said extreme positions when said first flange is inoperative, releasable locking means associated with said first flange for locking said first flange temporarily in a second of said extreme positions, said locking means being automatically operable to lock said first flange in said second extreme position in response to predetermined movement of said first flange from said first extreme position to said second extreme position, and control means associated with said first flange for releasing said locking means.

4,564,358

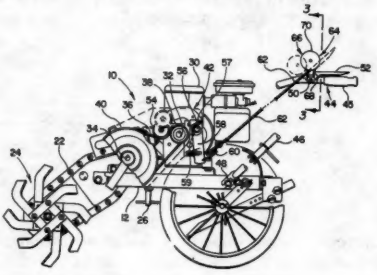
NON-INCREMENTAL CLUTCH ADJUSTMENT ARRANGEMENT

John T. Durrant, Schaghicoke, N.Y., assignor to Garden Way Incorporated, Troy, N.Y.

Filed May 17, 1984, Ser. No. 611,321

Int. Cl.⁴ F16H *7/08*

U.S. Cl. 474—101 **11 Claims**



1. For use in a powered apparatus having a main frame and a motor having an output shaft, a non incremental belt tension adjuster for selectively connecting the motor output shaft to a work unit and comprising:

(a) an operating lever;

(b) a rotary cable adjusting means carried by said operating lever;

(c) a control cable fixed to said rotary cable adjusting means;

(d) a belt drive tensioning lever movable between two positions, a belt drive engagement position and a slack non-power transmitting position, being operably connected to said control cable; and

(e) means for selectively changing and fixing the position of said rotary cable adjusting means to effect non-incremental selective adjustment of the length of said control cable between said operating lever and said drive tensioning lever thereby to compensate for any wear or stretching of a belt drive to ensure the desired engagement of output shaft and work unit.

4,564,359

AUTOTRANSFUSION APPARATUS'

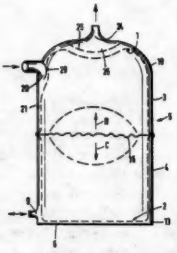
Dieter Rühland, Jungeblodtplatz 1, 4400 Münster, Fed. Rep. of Germany

Filed Feb. 3, 1984, Ser. No. 576,673

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1983, 3304486

Int. Cl.⁴ A61M *1/02, 5/14*

U.S. Cl. 604—4 **20 Claims**



1. An autotransfusion apparatus for body fluid including blood, comprising

an evacuatable vacuum-resistant container defining an inside

for the body fluid and having a bottom part and a cover part,

said cover part having means comprising an inlet opening into the inside of the container for the body fluid,

said cover part having means comprising an outlet opening from the inside of the container for the body fluid,

a screen covering said outlet opening,

means comprising another opening in said container for producing a gas-flow connection to space within the container having a gas pressure which differs from pressure in said inside of the container,

said another opening is arranged in the bottom part,

a membrane which is deformable by pressure and impervious to the body fluid being fixed hermetically at an edge of the membrane between said bottom part and said cover part,

said membrane dividing the container into the space forming a gas-fillable bottom space and a cover space defining said inside for the body fluid sealed from each other, said cover space communicating with said inlet and outlet openings, and

said membrane being deformable under the influence of fluid pressure, substantially against an inner contour of said cover part and against an inner contour of said bottom part, respectively.

4,564,360

ADJUSTABLE DOSE INJECTION PISTOL

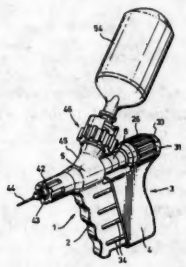
David M. Young, Loughborough, and Andrew W. Blower, Ashby-de-la-Zouch, both of England, assignors to Fisons plc, Ipswich, England

Filed Sep. 28, 1983, Ser. No. 536,744

Claims priority, application United Kingdom, Oct. 8, 1982, 8228809

Int. Cl.[4] A61D *7/00*

U.S. Cl. 604—183 **14 Claims**



1. An adjustable dose injection pistol comprising a body assembly including an elongate chamber, a piston assembly including a piston slidable in the chamber along a piston-chamber axis and being filled and discharged positions and means for adjusting one of said positions, wherein the means comprise a selectable plurality of channels included in one of the assemblies, the channels being spaced about and parallel to the piston-chamber axis, wherein one end of each channel is open and terminates in a common plane transverse to the piston-chamber axis, and an arrestor located on the other assembly, the arrestor being selectably engagable via the common plane with an aligned channel upon movement of said piston between said positions.

4,564,361

CATHETER

Hiroshi Akiyama, 2-5-12, Honkomagome, Bunkyo-ku, Tokyo, Japan

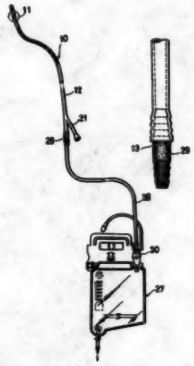
Division of Ser. No. 470,690, Feb. 28, 1983, Pat. No. 4,483,688, which is a continuation-in-part of Ser. No. 189,244, Sep. 22, 1980, abandoned, which is a continuation-in-part of Ser. No. 923,440, Jul. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 740,285, Nov. 9, 1976, abandoned. This application Aug. 21, 1984, Ser. No. 642,922

Claims priority, application Japan, Nov. 18, 1975, 50-137790

The portion of the term of this patent subsequent to Nov. 20, 2001, has been disclaimed.

Int. Cl.[4] A61M *25/00*

U.S. Cl. 604—265 **7 Claims**



1. A catheter and drainage system adapted to be carried by a person and utilized to drain urine from a to-be-drained body cavity of said person to a drainage bag carried by said person comprising, in combination, an indwelling catheter adapted to extend partially into said body cavity, said catheter comprising a flexible tubular member having a main lumen for urine discharge, one end of said main lumen being closed, said tubular member having an aperture adjacent to said one end to allow communication between said main lumen and the exterior of said tubular member, a balloon provided adjacent said aperture, an auxiliary lumen connected to said main lumen for inflating said balloon, an oligodynamically active metal deposited on a portion of only the outside periphery of said tubular member for producing metal ions upon contact with the urine, a urine collecting bag adapted to be carried by said person, said collecting bag having an inlet, and a tubular sterilizing means having oligodynamic activity connecting said catheter tube to said inlet of said collecting bag.

4,564,362

VAGINAL DEVICE

Michael S. Burnhill, Rte. 24 R.D. 2, Mendham, N.J. 07945

Filed Jul. 7, 1983, Ser. No. 511,759

Int. Cl.[4] A61F *13/20*

U.S. Cl. 604—286 **14 Claims**

1. A vaginal device consisting essentially of an outermost layer of resilient compressible open-celled polymeric foam, a

non-pororous barrier film layer formed of a liquid proof, soft elastomeric material affixed to said outermost foam layer and a second layer of open-celled polymeric foam affixed to the opposite surface of said non-porous film layer, said outermost and innermost foam layers differing in density and/or numbers of pores per inch with the more dense or smaller pored foam layer constituting the outermost layer, said outermost layer forming an expansion collar and being adapted to lie against the cervix of the uterus, where it aids in holding and securing the device in position and additionally reinforces the barrier effect of the film and innermost foam layer.

4,564,363

DELAYED ACTION ASSEMBLY

Brian G. Bagnall, Berwyn, and Robert J. Gyurik, Downingtown, both of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Jul. 13, 1983, Ser. No. 513,512
Int. Cl.[4] A61M *31/00*
U.S. Cl. 604—891 **8 Claims**

1. A delayed release, ruminant dosage form comprising from 1 to 4 dosage unit release assemblies, at least one of which is a delayed action assembly which, in turn, comprises;

a closed, non-biodegradable outer wall;

a dosage unit of an active ingredient in dispersible form within said wall;

a water-tight cover or plug which is capable of being displaced by internal gas pressure and which extends through said outer wall;

weight means sufficient to retain said delayed action assembly in the rumen and arranged within said dosage form, and

an internally disposed electrical circuit means which, in turn, comprises, interconnected;

a source of current;

an internally disposed chemical squib for generating internal gas pressure, within the assembly,

sufficient to remove said removable cover or plug; means for timing and activating said chemical squib, and

means for activating said circuit.

4,564,364

ACTIVE AGENT DISPENSER

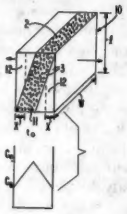
Alejandro Zaffaroni, Atherton, and Patrick S. L. Wong, Hayward, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed May 26, 1983, Ser. No. 498,381
Int. Cl.[4] A61F *15/00*
U.S. Cl. 604—897 **24 Claims**

1. A dispenser for releasing an active agent into an environment of use comprising in combination:

(a) at least onr non-depleted zone comprising a matrix material containing said agent at a concentration greater than the saturation concentration of the agent in said matrix material; and

(b) at least one depleted zone comprising a matrix material containing said agent at a concentration no greater than the saturation concentration of the agent in the matrix material, said depleted zone being disposed between a surface through which the agent is to be released to the environment and at least a substantial portion of said



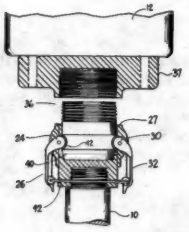
non-depleted zone with the interface between said depleted and non-depleted zones being disposed at a nonuniform distance from said releasing surface.

4,564,365

QUICK CHANGE MECHANISM FOR A LIMB PROSTHESIS

Richard A. Winer, P.O. Box 1673, Fort Lauderdale, Fla. 33302, and Kevin S. Garrison, 2301 N.W. 60th Ave., Sunrise, Fla. 33313

Filed Mar. 18, 1983, Ser. No. 476,704
Int. Cl.[4] A61F *2/80, 2/74*
U.S. Cl. 623—27 **1 Claim**



1. A coupling system for use in the connection and disconnection of a prosthetic accessory to a socket portion of a lower limb amputation site, such socket portion adapted to extend back over the lower limb to secure the socket portion thereon, the inventive coupling comprising:

(a) a hollow, pipe-like female element integrally depending from said prosthetic accessory, said female element having two longitudinal side openings, each within opposite walls of said female element;

(b) a pair of cam latches rotatably secured within said longitudinal side openings, such cam latches comprising, in combination, a convex arc and handle element disposed in a plane wherein the selective downward rotation of said latches will bring said convex arc of said cam latches into said side openings and, thereby, within the walls of said female element; and

(c) a male element having a first end and a second end, said first end integrally secured to said socket portion and said second end comprising an annular, circumferential shoulder, the exterior dimensions of said male element, being generally complimentary to the interior dimensions of said female element, said second end of said male element being press-fittably insertable into said longitudinal side openings of said female element, said male element being radially rotationally adjustable relative to said female element prior to locking of the cam latches, wherein said male element may then be securably engaged to thereby

achieve both radial and longitudinal engagement between said male and female elements by said selective downward rotation of said cam latches.

whereby, the lower extremity prosthetic accessory integrally secured to said female element may be readily connected or disconnected by the engagement or disengagement of the male and female elements through the selective locking of said cam latches.

4,564,366

LEATHER WITH FLUOROCHEMICAL FINISH

Kalyanji U. Patel, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 436,267, Oct. 25, 1982, Pat. No. 4,525,305.
This application Mar. 26, 1985, Ser. No. 716,365
Int. Cl.[4] C14C *00/00*; D06M *13/40*
U.S. Cl. 8—94.1 R 7 Claims

1. A process for imparting oil and water repellency to a fibrous substrate, which comprises contacting said substrate with a treating composition comprising fluorochemical compounds which are normally solid, water insoluble, aliphatic carboxylic acids and salts thereof which are self-dispersible in water, said compounds containing fluoroaliphatic and aliphatic carboxylic radicals, said fluoroaliphatic radicals having at least three fully fluorinated carbon atoms and a terminal perfluoromethyl group, and urylene and/or carbamato radicals, said radicals bonded together by organic linkages free of interfering moieties, said compounds containing at least 20 weight percent fluorine in the form of said fluoroaliphatic radical.

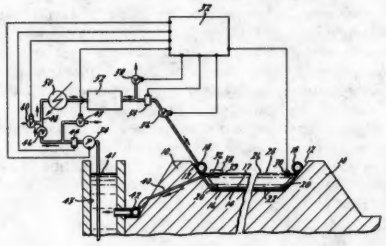
5. A fibrous substrate having deposited on a surface thereof fluorochemical compound according to the process of claim 1.

4,564,367

SOLAR SALT CRYSTALLIZER AND PROCESS FOR PRODUCING SALT

John F. Heiss, and Melvin E. Leverenz, both of St. Clair, Mich., assignors to Diamond Crystal Salt Company, St. Clair, Mich.

Filed Jun. 20, 1984, Ser. No. 622,475
Int. Cl.[4] B01D *9/02, 1/00*
U.S. Cl. 23—295 S 20 Claims



1. A solar crystallizer for producing salt comprising;

(a) means defining a shallow pond containing an aqueous salt solution provided with a substantially horizontal bottom and having the surface thereof exposed to solar radiation,

(b) inlet conduits positioned and arranged for discharging a substantially saturated brine into said pond at a lower stratum adjacent to the bottom thereof and above any salt crop deposited thereon,

(c) outlet conduits positioned and arranged for withdrawing solution from an upper stratum of the pond adjacent to the exposed surface thereof,

(d) level sensing means for sensing the level of solution in said pond,

(e) supply means for discharging brine into said pond through said inlet conduits in response to the solution level being disposed within a preselected range,

(f) skimmer means for withdrawing solution from said pond through said outlet conduits in response to the increase of solution level beyond a preset level,

(g) saturating means in said supply means for effecting substantially complete saturation of the brine discharged through said inlet conduits and

(h) control means operatively associated with said level sensing means, supply means, skimmer means and saturating means for controlling, in response to said level sensing means, said supply means, skimmer means and saturating means.

4,564,368

METHOD AND APPARATUS FOR USE IN DRYING BIOMASS PARTICLES

Willard C. Sawyer; Edith M. Sawyer; Sherron M. Keef, and John W. Sawyer, all of R.F.D. #2, Oxford, Me. 04270

Filed Apr. 11, 1983, Ser. No. 483,840
Int. Cl.[4] C10L *5/40, 9/08*
U.S. Cl. 44—1 D 10 Claims

1. Method of preparing biomass particles for use as fuel for stoves, heaters, furnaces, industrial boilers, pyrolizers and gasifiers or for use as feed stock for a chemical process, by way of examples, pulp mills and ethanol plants, said method consisting of the steps of processing biomass wastes to provide particles substantially all within a size range that they will pass through a four inch mesh screen but not through a one-eighth inch mesh screen, collecting said particles to provide a body thereof that is substantially uniform in width and depth throughout the length thereof, providing a continuous stream of hot gas the temperature of which is within the approximate range of from 50° F.–600° F., subjecting the body of said sized particles to the hot gas stream to reduce the moisture content of the particles on an average to a wanted extent in the approximate range of from 5% to 35% wet basis by introducing the hot gases through one surface of the body of particles and permitting the gas to escape from the opposite surface thereof while controlling the velocity and pressure of the gas stream to enable the layer of particles adjacent the opposite surface to serve as a relatively cool filter bed the temperature of which is in the approximate range of 50° F. to 150° F. to condense and/or to trap to the desired extent particulates and/or acids or hydrocarbon emissions from entering the air or harming operators.

7. A dryer for use in drying wood and other biomass particles that are substantially all within a size range such that they will pass through a four inch mesh screen but not through a one-half inch mesh screen, said dryer including a chamber for a body of particles, one wall of said chamber provided with a substantial number of apertures dimensioned to prevent particles from passing therethrough, plenum means with which said apertures are in communication, a source of hot gas connected to said plenum means and operable to deliver a continuous stream of hot gas thereto, into and through the particles and then to exit from the opposite side of the body, means to sense the temperature of a layer of particles adjacent the opposite chamber wall and means responsive thereto to so control said gas stream that said layer functions as a stable filter bed the temperature of which does not exceed the approximate range of 50° F.–150° F. to prevent such contaminating emissions as particulate matter, acid and hydrocarbon emissions from escaping from the dryer to an unwanted extent.

4,564,369

APPARATUS FOR THE ENHANCED SEPARATION OF IMPURITIES FROM COAL

Lester E. Burgess; Karl M. Fox, both of Swarthmore; Phillip E. McGarry, Palmerton, and David E. Herman, Jim Thorpe, all of Pa., assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 267,777, May 28, 1981, Pat. No. 4,406,664, which is a continuation-in-part of Ser. No. 114,357, Jan. 22, 1980, Pat. No. 4,332,593. This application Jul. 22, 1983, Ser. No. 516,449
Int. Cl.[4] C10L *1/32, 5/22*
U.S. Cl. 44—2 7 Claims

1. An arrangement for producing a beneficiated coal product, said arrangement comprising in sequential combination:

coal pulverization means;

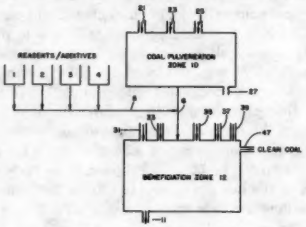
means for feeding pulverized coal from said coal pulverization means to a surface treatment reaction zone;

a surface treatment reaction zone having means for introducing measured amounts of chemical reactants for providing surface treatment of said coal in an aqueous medium;

means for introducing surface treated coal from said surface treatment reaction zone to a water wash zone; and

at least one water wash zone having means for admixing ingredients introduced or contained therein under high shear agitation.

3. The arrangement of claim 1 wherein said water wash zone is comprised of a collection and separation means for permitting a water-wetted ash phase to be collected and separated and a collection and separation means for permitting floating



surface treated coal to be collected and separated from the surface of the water.

4. The arrangement of claim 3 further comprising transfer means to remove the collected coal to a mechanical drying means; mechanical drying means to remove excess water from the transferred coal; and high shear dispersing means by which the treated recovered coal is dispersed into a quantity of fuel oil sufficient to produce a non-settling fluid coal containing fuel product.

4,564,370

IGNITION ARTICLE AND COMPOSITION FOR THE RAPID IGNITION OF COAL OR CHARCOAL FIRES

Edward F. Gregory, 11 Pine St., Wellesley, Mass. 02181

Continuation of Ser. No. 578,559, Feb. 9, 1984, abandoned, which is a continuation-in-part of Ser. No. 506,500, Jun. 21, 1983, abandoned. This application Jan. 25, 1985, Ser. No. 694,803

Int. Cl.[4] C10L *11/06*

U.S. Cl. 44—38 **15 Claims**

1. An article for the rapid ignition of a coal or charcoal fire, which article consists essentially of:

(a) a tray having upright sides and a bottom surface and composed of a stiff, combustible, cellulosic fibrous sheet material, the sheet material of the tray substantially uniformly impregnated with and containing a combustible amount of from about 30 to 90 percent by weight of a low melting point solid hydrocarbon combustible material;

(b) a pressed wood fiber board sheet material having a top surface, which sheet material substantially covers the bottom surface of the tray;

(c) a plurality of charcoal briquettes to be ignited, the briquettes forming at least a single layer of spaced-apart positioned briquettes, the layer placed on and covering substantially the top surface of the pressed wood fiber board sheet material; and

(d) means to contain the tray and the layer of briquettes in positioned relationships.

2. The article of claim 1 wherein the combustible material comprises a paraffin wax.

4. The article of claim 1 wherein the tray is characterized by a plurality of separate spaced apart integrally formed cavities in the bottom surface of the tray, and the briquettes are positioned in said cavities to form the layer.

4,564,371

DISPERSANT FOR AQUEOUS SLURRY OF COAL

Tsunehisa Ueda, Zushi, and Tadao Natsuume, Yokosuka, both of Japan, assignors to Nippon Zeon Co Ltd, Tokyo, Japan

Continuation of Ser. No. 495,242, May 17, 1983, abandoned. This application Jan. 23, 1985, Ser. No. 693,823

Claims priority, application Japan, May 17, 1982, 57-82934

Int. Cl.[4] C10L *1/18*

U.S. Cl. 44—51 **11 Claims**

1. A composition comprising an aqueous coal slurry having a viscosity of up to about 1400 centipoises and containing 50 to 90% by weight of coal and 0.3 to 1 parts by weight, per 100 parts by weight of coal, of a dispersant which is a water-soluble salt of a polymeric substance having a sulfonic acid residue bonded through an acid imide linkage or an acid amide linkage in the molecule.

4,564,372

QUATERNARY DEPOSIT CONTROL ADDITIVES

Curtis B. Campbell, Rodeo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

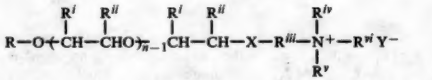
Continuation-in-part of Ser. No. 518,506, Jul. 29, 1983, abandoned, and Ser. No. 518,205, Jul. 29, 1983, abandoned, which is a continuation-in-part of Ser. No. 510,128, Jun. 30, 1983, abandoned. This application Jul. 20, 1984, Ser. No. 632,784

Int. Cl.[4] C10L *1/22*

U.S. Cl. 44—71 **14 Claims**

1. A fuel composition comprising a major portion of hydrocarbon boiling in the gasoline range, and from 30 to about 10,000 ppm of a quaternized polyoxyalkylene amine salt of molecular weight from about 500 to about 2500, said polyoxyalkylene moiety comprising 1 to 30 oxyalkylene units selected from oxyalkylene units having 2 to 4 carbon atoms, said amine moiety comprising from 1 to about 12 amine nitrogen atoms and from about 2 to 40 carbon atoms, and further comprising a connecting moiety linking said polyoxyalkylene moiety and said amine moiety and wherein the anion of said quaternized polyoxyalkylene amine salts is a halide selected from the group consisting of chloride, bromide, and iodide.

13. A fuel composition comprising a major portion of hydrocarbon boiling in the gasoline range and from 30 to about 10,000 ppm of a fuel additive of the formula:



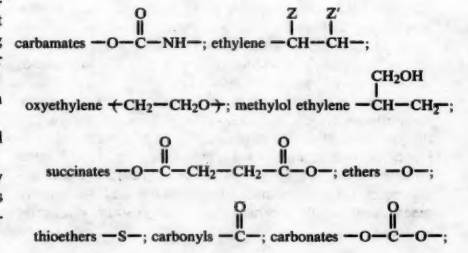
wherein

R=and alkyl group of 5 to 30 carbon atoms, aryl group of 6 to 30 carbon atoms, alkaryl group of 7 to 30 carbon atoms, aralkyl group of 7 to 30 carbon atoms, or methylol-substituted alkyl group of 5 to 30 carbon atoms;

R^i and R^{ii} independently=hydrogen, methyl or ethyl;

n=1 to 30;

X=a connecting group selected from the group consisting of:


carbamates —O—C—NH—; ethylene —CH—CH—;
oxyethylene —CH2—CH2O—; methylol ethylene —CH—CH2—;
succinates —O—C—CH2—CH2—C—O—; ethers —O—;
thioethers —S—; carbonyls —C—; carbonates —O—C—O—;

-continued

esters $-\overset{O}{\overset{\|}{C}}-O-$; amides $-\overset{O}{\overset{\|}{C}}-NZ-$; and methylene $-CHZ-$;

where

Z and Z'=H, or an alkyl group of from 1 to 2 carbon atoms;

R^{iii}=a chemical bond, an alkylene or hydroxy-substituted alkylene group of 2 to 12 carbon atoms, or $-NH-CH_2-CH_2)_x$, where x=1 to 5;

R^{iv} and R^{v} independently=alkyl groups of 1 to 20 carbon atoms, aralkyl group of 7 to 20 carbon atoms, alkaryl group of 7 to 20 carbon atoms, or phenyl;

R^{vi}=alkyl groups of 1 to 20 carbon atoms, aralkyl groups of 7 to 20 carbon atoms, alkaryl groups of 7 to 20 carbon atoms, phenyl, or $-NH-CH_2-CH_2)_x$, where x=1 to 5;

Y=a halide selected from the group consisting of chloride, bromide or iodide.

4,564,373

METHOD FOR BUBBLE-FREE GAS FEED

Franz J. Schmitz; Rudi Wollbeck, both of Erlenbach, and Wolfgang Klein, Klingenberg, all of Fed. Rep. of Germany, assignors to Akzo N.V., Arnhem, Netherlands

Continuation-in-part of Ser. No. 352,846, Feb. 26, 1982, abandoned. This application Mar. 12, 1982, Ser. No. 357,560

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1981, 3107874

Int. Cl.⁴ B01D *53/22*

U.S. Cl. 55—16 **8 Claims**

1. Method for the bubble-free feed of gaseous reactants of a chemical and/or biological reaction into a liquid reaction medium, comprising filling pores of a porous polymer membrane with the reaction medium and then providing one side of the porous polymer membrane with the gaseous reactants, while immersing the other side of the porous polymer membrane into the liquid reaction medium, with pressure of the gaseous reactants lying below the bubble pressure determined with the reaction medium and being at least so great that the liquid reaction medium does not pass through the porous polymer membrane to the gas side.

4,564,374

DEVICE FOR INCORPORATION IN DENTAL SUCTION APPARATUSES FOR SEPARATION OF LIQUID AND SOLID COMPONENTS

Hans-Joachim Hofmann, Geradstetten, Fed. Rep. of Germany, assignor to Durr-Dental GmbH & Co. KG, Bietigheim, Fed. Rep. of Germany

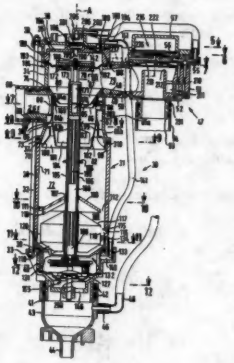
Continuation of Ser. No. 426,274, Jul. 27, 1982, abandoned, which is a continuation of Ser. No. 187,527, Sep. 15, 1980, abandoned, which is a continuation of Ser. No. 56,852, Jul. 12, 1979, abandoned, which is a continuation of Ser. No. 889,855, Mar. 24, 1978, abandoned. This application Sep. 21, 1983, Ser. No. 534,362

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1977, 2713321

Int. Cl.⁴ B01B *49/12*

U.S. Cl. 55—57 **40 Claims**

1. A separator for incorporation in dental suction apparatus for processing a suction stream, composed of air and liquid and solid materials coming from the mouth of a patient to separate cleaned air from liquid and solid material, said separator comprising a housing, a separation chamber in said housing, an inlet for the suction stream into said separation chamber, an outlet opening for cleaned suction air from said separation chamber, means for continuously applying suction to said outlet opening, means in said separation chamber for separating air from liquid and solid materials of the incoming suction stream, a drainage chamber below said separation chamber, a discharge outlet for liquid-solid discharge from said drainage chamber, means for sensing liquid level in said separation chamber, first valve means between said separation chamber and said drainage chamber, second valve means between said drainage chamber and said discharge outlet and means for controlling said first and second valve means in coordination with one another to



position said first valve normally closed and said second valve normally open during operation of said apparatus and to open said first valve and close said second valve when the liquid in said separation chamber reaches predetermined level to drain liquid and any solids therein from said separation chamber into said drainage chamber while suction continues to be applied to said outlet opening.

4,564,375

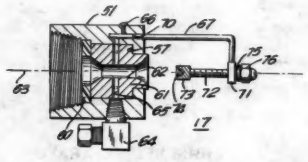
HUMIDIFICATION APPARATUS

Evelyn Munk, and Michael Munk, both of 28 Dorchester Dr., New York, N.Y. 10573

Continuation of Ser. No. 514,887, Jul. 18, 1983, abandoned. This application Feb. 1, 1985, Ser. No. 697,335

Int. Cl.⁴ B01D *50/00*

U.S. Cl. 55—259 **1 Claim**



1. Apparatus for humidifying and evaporatively cooling the air in a room, comprising:

an enclosure having an inlet port for receiving room air;

a fogging chamber in said enclosure, communicating with said input port;

an outlet port communicating with said fogging chamber for returning air to the room;

a circulating fan for creating a draft of air through said inlet port, fogging chamber, and outlet port;

an ultrasonic fogging device disposed in said fogging chamber, the fogging device including: a nozzle having an elongated open-ended passageway formed therein for receiving a supply of compressed air and an opening which communicates with said passageway through which a supply of water can enter the passageway; a parabolic resonator cup spaced from and facing the opening of the nozzle passageway; manually adjustable mounting means for said resonator cup for manu-

ally adjusting the spacing between said resonator cup and the opening of the nozzle passageway; said fogging device being oriented in said fogging chamber such that said spacing is transverse the direction of air circulation through said chamber; and

a filter disposed in said enclosure in the path of the humidified and cooled air from said fogging chamber, said filter containing silica to combine with calcium-containing residue in the humidified air.

4,564,376

FILTER ELEMENT AND METHOD OF MAKING A FILTER ELEMENT

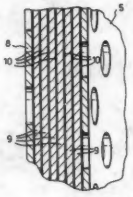
Colin T. Billiet, Durham, England, assignor to Domnick Hunter Filters Limited, Durham, England

Filed Oct. 14, 1983, Ser. No. 542,112

Claims priority, application United Kingdom, Oct. 15, 1982, 8229576

Int. Cl.⁴ B01D *46/00*

U.S. Cl. 55—486 **10 Claims**



1. A filter element comprising substantially coaxial inner and outer relatively rigid, permeable circumferentially continuous cylinders defining therebetween an annular space having a given radial dimension, and a spirally-wound cylindrical filter structure sandwiched in said annular space between said two cylinders, said filter structure comprising a plurality of layers of microporous non-woven borosilicate glass fibre material, each pair of adjacent layers being separated by a layer of strong, fluid-permeable flexible support material, said cylinders being positioned so as to maintain said filter structure under substantially uniform radical compression over the whole of its area, and said filter structure having a wall thickness in uncompressed condition thereof such that the difference between said wall thickness in uncompressed condition and said given radial dimension of said annular space is from 25% to 45% of said wall thickness of said filter structure in uncompressed condition so that said filter structure is compressed from 25% to 40% of its original thickness.

4,564,377

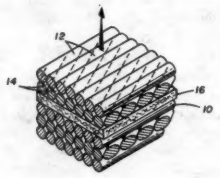
FIBER BED SEPARATOR

Babur M. Kocatas, Clayton, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 29, 1984, Ser. No. 626,073

Int. Cl.⁴ B01D *46/10*; B32B *5/12*

U.S. Cl. 55—488 **10 Claims**



1. A fiber bed separator for collecting aerosols from a flowing gas stream comprising:

a bed of staple fibers having a diameter from about 5 microns to about 30 microns, and

means producing at least one discontinuity to produce a vertical passage for drainage of collected aerosols within said bed of fibers and to prevent the passage of aerosols from a downstream surface of the bed.

4,564,378

METHOD FOR PRODUCING A PREFORM FOR LIGHT WAVEGUIDES

Max Kuisl, Ulm, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 9, 1984, Ser. No. 578,573

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1983, 3304721

Int. Cl.⁴ C03B *37/01*

U.S. Cl. 65—3.12 **8 Claims**

1. In a method of producing a glasy preform for a light waveguide including depositing a glass forming layer on a tubular substrate disposed in a reaction chamber, and subsequently subjecting said glass forming layer to a heating process to convert said glass forming layer to a glassy layer; the improvement wherein said step of depositing comprises: providing a gaseous mixture of silicon tetrachloride ($SiCl_4$) gas and water vapor; cooling and maintaining said substrate at a temperature between 20° C. and 800° C. while heating said reaction chamber to a temperature of substantially greater than 800° C.; and flowing a stream of said gaseous mixture through the reaction chamber to react said silicon tetrachloride gas with said water vapor to precipitate a glass forming layer of silicon dioxide particles from the reacted gas and water vapor on the cooled substrate.

4,564,379

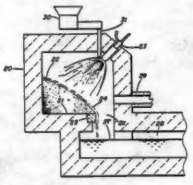
METHOD FOR ABLATING LIQUEFACTION OF MATERIALS

Gerald E. Kunkle, New Kensington, and Joseph M. Matesa, Plum Boro, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 481,970, Apr. 4, 1983, abandoned, which is a continuation-in-part of Ser. No. 288,581, Jul. 30, 1981, Pat. No. 4,381,934. This application Jun. 1, 1984, Ser. No. 616,103

Int. Cl.⁴ C03B *3/00*

U.S. Cl. 65—135 **16 Claims**



1. A method of liquefying a thermally meltable material to produce a molten product comprising:

insulating an interior side wall portion of a vessel encircling a central cavity with a lining of pulverulent material differing from the composition of the material being liquefied by a constituent whose presence is not essential to the final product;

feeding pulverulent material to be liquefied onto an upper inlet portion of the lining;

heating the cavity to partially liquefy the meltable material so that the partially liquefied material flows over the lining and flows freely to a lower outlet where it is drained from the vessel; and

balancing the rate of heating and the rate of feeding addi-

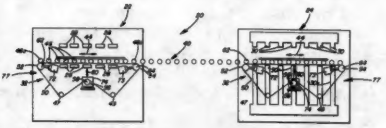
tional material onto the lining so as to maintain a stable thickness of the lining sufficient to protect the vessel from undue thermal deterioration.

4,564,380

ANTIBACKLASH CONVEYOR DRIVE MECHANISM

Michael T. Fecik; Gary V. Cannon, both of Pittsburgh, and Gayland S. Beresik, Natrona Heights, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 21, 1984, Ser. No. 685,019
Int. Cl.[4] C03B 35/18
U.S. Cl. 65—163 20 Claims



1. A conveyor drive mechanism for driving an article conveyor, comprising:

first, second, and third pulleys spaced apart from each other;

an endless drive loop trained over said first, second, and third pulleys, wherein said drive loop has an active area disposed in driving relationship to said article conveyor;

a means for imparting a first torque of a predetermined magnitude and direction to said first pulley;

a means for imparting a second torque of a predetermined magnitude and a direction opposite to the direction of said first torque, to said second pulley, to impose opposed tensional forces in said active area of said drive loop; and

a means for imparting a drive torque of selected magnitude and direction to said third pulley to thereby impart commensurate rotational motion to said drive loop to drive said article conveyor.

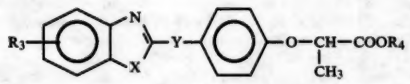
4,564,381

INCREASE OF CARBOHYDRATE ACCUMULATION IN PLANTS BY MEANS OF SUBSTITUTED DERIVATIVES OF PHENOXYALKANOIC ACIDS AND CYCLOHEXANEDIONES

Hermann Bieringer, Eppstein; Helmut Bürstell, Frankfurt am Main; Reinhard Handte, Hofheim am Taunus; Helmut Köcher, Hofheim am Taunus, and Ernst-Friedrich Schulze, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 302,189, Sep. 14, 1981, abandoned. This application Oct. 7, 1983, Ser. No. 540,093
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1980, 3034845
Int. Cl.[4] A01N 43/76, 43/78
U.S. Cl. 71—88 5 Claims

1. A process for increasing the carbohydrate content of plants which comprises treating the plants within about 1 to 13 weeks before harvest time of said plants with an effective amount of a compound of the formula



in which

Y is —O—,

X is oxygen or sulfur;

R_3 is H, and Cl, and

R_4 is (C_1–C_4)alkyl radical.

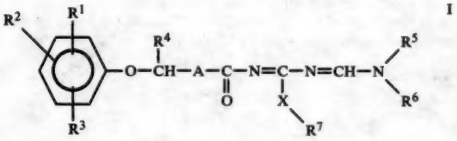
4,564,382

PHENOXYALKANOYL DERIVATIVES AND THEIR USE IN PLANT PROTECTION

Rainer Liebl, Gersthofen; Reinhard Handte, Gablingen; Hilmar Mildenberger, Kelkheim; Klaus Bauer, Rodgau, and Hermann Bieringer, Eppstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 8, 1984, Ser. No. 669,762
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1983, 3340770
Int. Cl.[4] A01N 43/00, 31/00; C07D 265/30, 211/60
U.S. Cl. 71—88 14 Claims

1. A compound of the formula I



I

in which

R^1, R^2 and R^3 independently of one another are hydrogen, F, Cl, Br or (C_1–C_4)-alkyl; and R^1 also is CF_3, CN, NO_2 or COO-(C_1–C_4)-alkyl;

A is a direct bond, —CH_2—CH_2— or —CH=CH—;

X is O, S or NR^8;

R^4 is H or (C_1–C_4)-alkyl;

R^5 and R^6 are identical or different (C_1–C_4)-alkyl radicals;

R^7 is (C_1–C_4)-alkyl, benzyl or phenethyl, the phenyl radicals being unsubstituted or mono- or di-substituted by halogen, CF_3, NO_2 or (C_1–C_4)-alkyl; and

R^8 is H or (C_1–C_4)-alkyl; or

R^7 and R^8, together with the nitrogen atom, denote a pyrrolidine, piperidine, morpholine or piperazine ring, each ring being unsubstituted or substituted by 1 or 2 CH_3 groups.

8. A method of combating harmful plants, which comprises applying a herbicidally active amount of a compound as claimed in claim 1 to the cultivated areas to be treated.

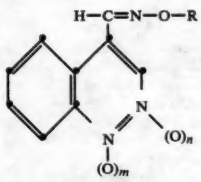
4,564,383

USE OF 4-(HYDROXYIMINOMETHYL)CINNOLINE AND CONGENERS THEREOF FOR CONTROLLING THE GROWTH OF UNWANTED PLANTS

Herbert Estreicher, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 15, 1983, Ser. No. 523,228
Int. Cl.[4] A01N 43/58
U.S. Cl. 71—92 1 Claim

1. A method for controlling the growth of unwanted plants, which method comprises applying to the foliage of the plants an effective amount of a compound of the formula



(I)

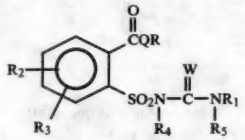
wherein m is zero or one, n is zero or one, R is hydrogen, or contains from one to ten carbon atoms and is alkyl optionally substituted by alkenyl, and salts of the compounds wherein R is hydrogen.

4,564,384
AGRICULTURAL SULFONAMIDES

George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours And Company, Wilmington, Del.

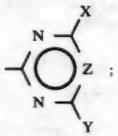
Division of Ser. No. 452,106, Dec. 22, 1982, which is a division of Ser. No. 98,781, Nov. 30, 1979, Pat. No. 4,394,508, Continuation-in-part of Ser. No. 29,281, Apr. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 15,341, Mar. 1, 1979, abandoned, which is a continuation-in-part of Ser. No. 965,070, Nov. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 910,965, May 30, 1978, abandoned. This application Aug. 15, 1983, Ser. No. 523,352
Int. Cl.[4] A01N *43/54*
U.S. Cl. 71—92 8 Claims

1. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of the compound of the formula below, and at least one of the following: surfactant, solid or liquid diluent;



wherein

Q is O;
W is O;
R is C_1–C_4 alkyl;
$R_2$is H;
R_3 is H;
R_4 is H;
R_5 is H or CH_3;
R_1 is



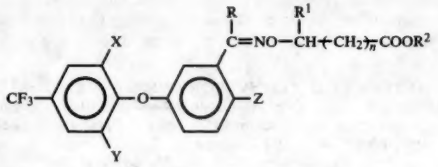
X is H, CH_3, OCH_3 or OC_2H_5;
Y is H, Cl, CH_3, OCH_3 or OC_2H_5; and
Z is CH.

4,564,385
HERBICIDALLY ACTIVE SUBSTITUTED DIPHENYL ETHER OXIME DERIVATIVES

Dennis K. Krass, Canal Fulton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 601,460, Apr. 18, 1984, abandoned, which is a continuation-in-part of Ser. No. 373,815, Apr. 30, 1982, which is a division of Ser. No. 136,171, Apr. 15, 1980, Pat. No. 4,344,789, which is a continuation-in-part of Ser. No. 38,043, May 11, 1979, abandoned. This application Jan. 28, 1985, Ser. No. 695,500
Int. Cl.[4] A01N *37/42*
U.S. Cl. 71—98 6 Claims

1. A compound represented by the formula:



wherein:

X and Y are hydrogen or halogen provided that at least one of X or Y is halogen;
Z is nitro, halogen or cyano;
R is hydrogen, halogen, C_1 to C_4 alkyl or haloalkyl, C_1 to C_4 alkoxy or alkylthio, mono or dialkylamino;
R^1 is hydrogen or C_1 to C_4 alkyl;
R^2 is hydrogen or C_1 to C_{10} alkyl, haloalkyl or alkoxyalkyl; and
n is 0, 1, 2 or 3 with the provisos that when R is hydrogen or alkyl, R^1 is hydrogen or methyl, R^2 is hydrogen, alkyl or a salt ion and X and Y are selected from hydrogen or chlorine, then n is 1, 2 or 3.

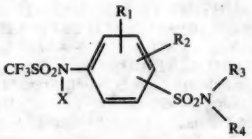
4. A herbicidal composition containing an inert carrier and a herbicidally effective amount of a compound or mixture of compounds defined in claim 1.

4,564,386
TRIFLUOROMETHANESULFONANILIDES, AND THEIR PRODUCTION AND USE

Hiroyuki Konishi; Shunichi Hashimoto, and Hiromichi Oshio, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 404,705, Aug. 3, 1982. This application Aug. 4, 1983, Ser. No. 520,211
Int. Cl.[4] A01N *41/00*; C07C *143/72*
U.S. Cl. 71—103 9 Claims

1. A compound of the formula:



(I)

wherein R_1 and R_2 are, the same or different, each independently a hydrogen atom, a halogen atom or a C_1–C_4 alkyl group, R_3 and R_4 are, the same or different, each independently a hydrogen atom, a C_1–C_4 alkyl group, a C_3–C_6 cycloalkyl group, a C_3–C_4 alkenyl group, a C_3–C_5 alkynyl group, a C_1–C_4 alkoxy group, a C_7–C_8 hydrocarbyl aralkyl group, a C_1–C_4 alkoxy(C_1–C_4)alkyl group or a C_2–C_5 acyl group and X is a C_2–C_5 and acyl group, provided that R_3 and R_4 are not simultaneously a hydrogen atom or a C_2–C_5 acyl group.

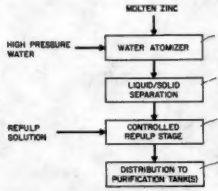
4,564,387
WET ZINC DUST ATOMIZATION AND DISTRIBUTION

Nassef E. Ghatas, Valleyfield, and John G. Peacey, Pointe Claire, both of Canada, assignors to Brunswick Mining and Smelting Corporation Limited, Bathurst, Canada

Filed May 13, 1983, Ser. No. 494,310
Claims priority, application Canada, Aug. 10, 1982, 409129
Int. Cl.[4] C22B *19/00*
U.S. Cl. 75—0.5 A 4 Claims

1. A method for forming from molten zinc a slurry having a concentration of zinc dust suitable for use in purifying zinc-containing solutions for electrolytic zinc plant operations, said method comprising the steps of:

(a) atomizing molten zinc into a slurry with a high pressure aqueous medium at a pressure higher than 1000 psi so as to produce zinc dust particles having a particle size of at least 70% passing 100 mesh and a surface area of irregular shape, said surface area being substantially larger per unit weight than the surface area of substantially spherical particles of the same particle size;



(b) performing a liquid/solid separation on the slurry for removing water from the zinc dust slurry to concentrate the slurry so that the water balance in the plant is controlled; and

(c) adding a zinc sulfate solution to said concentrated slurry to dilute said concentrated slurry at said concentration of zinc dust suitable for introduction into said electrolytic zinc plant operation.

4,564,388

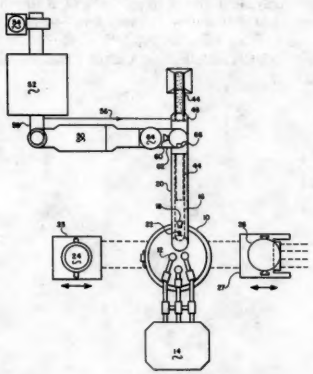
METHOD FOR CONTINUOUS STEELMAKING

John A. Vallomy, Charlotte, N.C., assignor to Intersteel Technology, Inc., Matthews, N.C.

Continuation-in-part of Ser. No. 636,944, Aug. 2, 1984. This application Apr. 5, 1985, Ser. No. 720,225

Int. Cl.[4] C21C *7/00*

U.S. Cl. 75—12 **23 Claims**



1. A method for the continuous refining of steel, comprising:

segregating iron-bearing scrap according to its composition;

preheating said scrap;

feeding said iron-bearing scrap, direct reduced iron, or a mixture thereof to an electric powered steelmaking furnace for melting and refining therein;

feeding slag formers to the steelmaking furnace;

introducing carburizers into the steelmaking furnace;

heating the charge electrically to melt the charge and form a molten metal bath within the furnace with a molten slag layer on said molten metal bath;

maintaining said slag in a foaming condition during the steel making process;

continuously feeding metallics, slag formers, and carburizers to said furnace;

maintaining full electric power to said furnace at all times during the charging, melting and refining operations; and

tapping said furnace while continuously feeding said furnace.

4,564,389

PROCESS FOR COAL-GASIFICATION AND MAKING PIG IRON

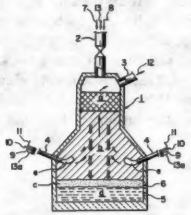
Hideyuki Yamaoka, Chiba; Michiharu Hatano, Sawara; Tomio Miyazaki, Hasaki; Teruhisa Shimoda, Itako, and Koji Oki, Omigawa, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 372,147, Apr. 27, 1982, abandoned. This application Jun. 6, 1984, Ser. No. 617,912

Claims priority, application Japan, Jun. 10, 1981, 56-89275; Jun. 22, 1981, 56-96390; Dec. 28, 1981, 56-209851; Apr. 2, 1982, 57-53703

Int. Cl.[4] C21B *11/00*

U.S. Cl. 75—38 **30 Claims**



1. A process for the production of pig iron and the gasification of fuel which comprises:

(a) providing a furnace with a shaft-like furnace main;

(b) providing a static coke-filled bed packed substantially with coke of lump form within the furnace main, the coke-filled bed containing voids;

(c) charging unmolten reduced iron on the top of the coke-filled bed to form a melting section of a stock borne thereon;

(d) providing fuel comprising primarily carbon and hydrogen to the lower region of the said coke-filled bed;

(e) supplying a gas primarily comprising oxygen to said lower region of the said coke-filled bed through at least one tuyere,

(f) burning and gasifying the fuel in the lower region of the coke-filled bed by means of combustion with oxygen to thereby generate a reducing hot gas comprised of primarily carbon monoxide and hydrogen;

(g) allowing said reducing hot gas to ascend through the voids of the coke-filled bed and melt the reduced iron in said melting section by the sensitive heat of the reducing hot gas, with the resulting molten iron and iron oxide-containing slag flowing down through the voids of the coke-filled bed in countercurrent relationship to the ascending hot gas, while having the iron oxide reduced by the coke with the carbon in said coke dissolving in said molten iron to thereby convert the molten iron into molten pig iron,

(h) recovering the hot gas, and

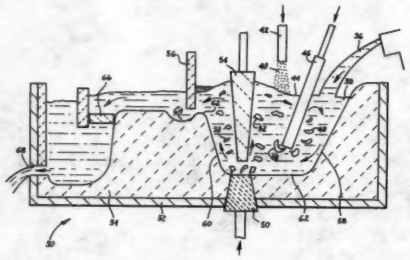
(i) discharging the pig iron and slag from the lowermost region of the furnace upon collecting same therein.

4,564,390

DECARBURIZING A METAL OR METAL ALLOY MELT

Debabrata Gupta, New Haven, and John C. Yarwood, Madison, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 21, 1984, Ser. No. 684,775
Int. Cl.[4] C21C *7/00*
U.S. Cl. 75—51.7 21 Claims



1. A process for decarburizing a melt of metal or metal alloy, comprising the steps of:

(a) providing a melt comprising metal or metal alloy, carbon, and at least one oxide forming metallic alloying element;

(b) reducing the carbon content of the melt from an initial value of about 0.1 wt % carbon to an a final value of not less than about 0.003 wt % carbon by:

i. contacting the metal or metal alloy melt with a reactive oxide of said metallic alloying element; and

ii. simultaneously stirring said melt by injecting an inert gas below the surface of the melt.

4,564,391

METHOD FOR THE RECOVERY OF SILVER FROM SILVER ZEOLITE

George A. Reimann, Idaho Falls, Id., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 5, 1985, Ser. No. 708,618
Int. Cl.[4] C22B *11/00*
U.S. Cl. 75—63 10 Claims

1. A method for recovering silver from silver exchanged zeolite comprising:

determining the weight of refractory aluminosilicate in the silver exchanged zeolite,

mixing with the silver exchanged zeolite, based on the weight of the aluminosilicate, from about 15 to 25 weight percent Na_2O, from about 2 to 6 weight percent B_2O_3, and 6 to 15 weight percent of one or more selected from the group of CaF_2 and NaF to form a mixture,

heating the mixture to a temperature sufficient to melt the mixture, forming a melt of molten slag, molten silver, and metallic impurities,

maintaining the temperature for a period of time sufficient for the molten silver to separate from the slag,

cooling the mixture, and

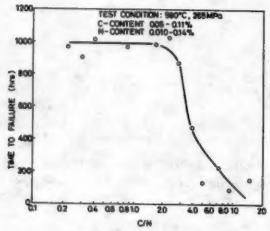
separating the silver containing the impurities from the slag thereby recovering the silver from the silver exchanged zeolite.

4,564,392

HEAT RESISTANT MARTENSITIC STAINLESS STEEL CONTAINING 12 PERCENT CHROMIUM

Tateo Ohhashi; Hideyuki Kawamoto, and Yutaka Murakami, all of Hokkaido, Japan, assignors to The Japan Steel Works Ltd., Tokyo, Japan

Filed Jul. 19, 1984, Ser. No. 632,174
Claims priority, application Japan, Jul. 20, 1983, 58-130773
Int. Cl.[4] C22C *38/44, 38/46*
U.S. Cl. 75—128 V 7 Claims



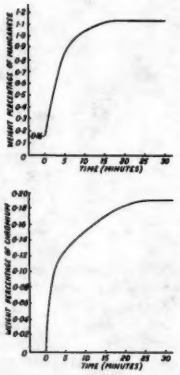
1. A heat resistant martensitic stainless steel consisting of, in weight percent, 0.05% to 0.12% carbon, not more than 0.5% silicon, not more than 1.5% manganese, not more than 1.5% nickel, 9.0 to 13.0% chromium, and 0.5 to 2.0% molybdenum, 0.05 to 0.50% vanadium and not more than 0.15% nitrogen, the balance being iron and impurities, and the weight ratio of carbon to nitrogen (C/N) being not more than 3:1.

4,564,393

INTRODUCING ONE OR MORE METALS INTO A MELT COMPRISING ALUMINUM

Peter Murray, and David Slinn, both of Rotherham, England, assignors to Shieldalloy Corporation, Newfield, N.J.

Filed Dec. 22, 1982, Ser. No. 452,112
Claims priority, application United Kingdom, Dec. 23, 1981, 8138667
Int. Cl.[4] C22B *21/06*
U.S. Cl. 75—256 40 Claims



1. An additive composition for introducing at least one additive material into a melt comprising aluminum, the additive composition consisting of as essential ingredients an intimate admixture containing the following components:

(a) a metallic aluminum-comprising powder;

(b) a powder of at least one additive metallic material to be introduced into the said melt selected from the group

consisting of metallic manganese, chromium, tungsten, molybdenum, titanium, vanadium, iron, cobalt, copper, niobium, tantalum, zirconium, hafnium, silver and alloys thereof; and

(c) a flux component selected from the group consisting of potassium aluminum fluoride (potassium cryolite), potassium chloride, potassium fluoride, sodium chloride, sodium fluoride, sodium carbonate, and admixtures thereof.

4,564,394

PREVENTING LATERAL OXIDE GROWTH BY FIRST FORMING NITRIDE LAYER FOLLOWED BY A COMPOSITE MASKING LAYER

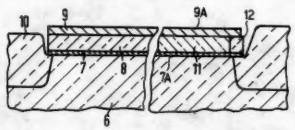
Egon Bussmann, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 12, 1984, Ser. No. 630,103

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1983, 3329074

Int. Cl.[4] H01L *21/22, 21/265*

U.S. Cl. 148—1.5 **1 Claim**



1. In an improved process for producing a semiconductor layer arrangement utilizing the so called LOCOS or isoplanar procedure wherein a first nitride layer is applied to a silicon substrate and is then covered either by (a) a combination layer structure of interventing silicon oxide layers and then a second nitride layer, or (b) by a polysilicon layer structure, either of such layer structures being suitable as a masking for a subsequently applied field oxide structure, the improvement which comprises in combination:

applying said first nitride layer in a thickness less than about 50 nm under low pressure conditions,

implanting into said first nitride layer nitrogen,

applying over said so implanted nitride layer an intermediate layer selected from the group consisting of silicon oxide and polysilicon, and thereafter

covering said intermediate layer with a further layer comprised of silicon nitride.

4,564,395

METHOD FOR PRODUCING AMORPHOUS METALS

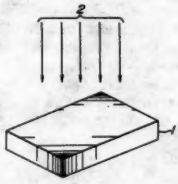
Hirotaro Mori, Suita, and Hiroshi Fujita, Ibaraki, both of Japan, assignors to Osaka University, Suita, Japan

Filed Mar. 2, 1984, Ser. No. 585,912

Claims priority, application Japan, Jul. 16, 1983, 58-128709

Int. Cl.[4] C22F *3/00*

U.S. Cl. 148—4 **1 Claim**



1. A method for converting at least the surface of an intermetallic compound selected from the group consisting of NiTi, Fe_2Ti, Zr_2Al, CuZr, Cu_3Ti_2, Co_2Ti, $CU_{10}Zr_7$, Zr_2Ni, Nb_7Ni_6, NoNi, Mn_2Ti, CuTi, V_3Si and iron-zirconium into an amorphous metal comprising the steps of:

(a) irradiating said intermetallic compound with an electron beam having a flux density not exceeding approximately 1.3×10^{24} e/m^2-sec, the energy of said electron beam being sufficient to introduce a lattice defect into said intermetallic compound;

(b) heating said intermetallic compound to a temperature not exceeding approximately 290° K.; and

(c) maintaining said electron beam irradiation for at least approximately 60 seconds until at least the surface of said intermetallic compound has been converted into an amorphous metal.

4,564,396

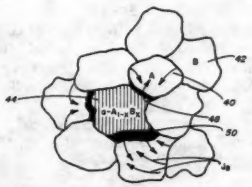
FORMATION OF AMORPHOUS MATERIALS

William L. Johnson, Pasadena, Calif., and Ricardo B. Schwarz, Westmont, Ill., assignors to California Institute of Technology, Pasadena, Calif.

Filed Jan. 31, 1983, Ser. No. 462,441

Int. Cl.[4] C23C *8/00*

U.S. Cl. 148—4 **14 Claims**



1. A method of forming metastable solid, amorphous materials comprising the steps of:

contacting a solid material with a second substance;

heating the substance and the solid material to a temperature above the temperature at which the diffusion rate of the substance into the solid material to react with a component of solid material to form a metastable solid material is at least 10^4 times the rate of self-diffusion of a component of the solid material; and

reacting the substance and the solid material at a temperature no more than 25° C. above the glass crystallization temperature of the metastable, solid amorphous material for a time sufficient for the substance to diffuse a predetermined distance through the solid material to form said metastable solid, amorphous material.

4,564,397

COMPOSITION AND PROCESS FOR INHIBITING CORROSION OF FERROUS OR NON-FERROUS METAL SURFACED ARTICLES AND PROVIDING RECEPTIVE SURFACE FOR SYNTHETIC RESIN COATING COMPOSITIONS

Ross C. Opsahl, Roselle, Ill., assignor to J. N. Eltzroth & Associates Inc., Palatine, Ill.

Filed Jun. 21, 1984, Ser. No. 622,993

Int. Cl.[4] C23F *7/10*

U.S. Cl. 148—6.15 R **13 Claims**

1. A process of passivating the surfaces of ferrous and nonferrous metals which have a coating of zinc phosphate, iron phosphate or manganese-iron phosphate which comprises rinsing said coated surfaces with an aqueous solution of urea, an acidulated urea, or a compound containing a urea moiety in sufficient amount and under conditions so as to form a resistant barrier on said surfaces and coating said corrosion resistant barrier with a synthetic resinous coating composition.

4,564,398
OPTIMIZED PHOTOVOLTAIC EFFECT

R. Gilbert Kaufman, Chicago, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jan. 11, 1985, Ser. No. 690,671
Int. Cl.[4] H01L *31/00*
U.S. Cl. 148—6.31 **20 Claims**

1. A process for the production of an optimized photovoltaic film of cuprous oxide on copper metal by the oxidation of copper at an elevated temperature, comprising the steps of:

(a) providing a metallic copper foil having a thickness no greater than about 0.005 inch;

(b) oxidizing the copper foil in the presence of an oxygen-containing gas at a temperature within the range from about 900° C. to about 1100° C. to provide a surface film layer of cuprous oxide;

(c) thereafter heat treating the oxidized copper foil at a temperature within the range from about 300° to about 700° C. in a substantially oxygen-free inert gas atmosphere; and

(d) quenching the heat treated, oxidized copper foil to substantially ambient temperature.

4,564,399
AMORPHOUS ALLOY FOR MAGNETIC HEAD AND MAGNETIC HEAD WITH AN AMORPHOUS ALLOY

Hiroshi Tateishi, Zushi, and Susumu Hashimoto, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 24, 1984, Ser. No. 573,379
Claims priority, application Japan, Jul. 26, 1983, 58-136608
Int. Cl.[4] C04B *35/00*
U.S. Cl. 148—31.55 **8 Claims**

1. An amorphous alloy for a magnetic head which, upon gradual cooling from a temperature of 500° C. at a speed of 3° C./minute, exhibits a minimum magnetic permeability above 350 at 5 MHz, and a coercivity maximum of 0.05 Oe, comprising a formula represented as follows:

$$Co_{100-T-X-Y-Z}Re_THf_XB_YSi_Z$$

where T, X, Y and Z respectively represent the atomic densities of elements Re, Hf, B and Si, and satisfy the following inequalities of formulae (1) to (5), as follows:

$$0.2 \leqq T \leqq 6 \quad (1)$$

$$6 \leqq X \leqq 15 \quad (2)$$

$$3 \leqq Y \leqq 14 \quad (3)$$

$$0 \leqq Z \leqq 11 \quad (4)$$

$$0.5 \leqq X/(X+Y) \leqq 5/6 \quad (5).$$

4,564,400
METHOD OF IMPROVING MAGNETS

Kalatur S. V. L. Narasimhan, Monroeville, and Charles D. Preusch, Pittsburgh, both of Pa., assignors to Crucible Materials Corporation, Pittsburgh, Pa.

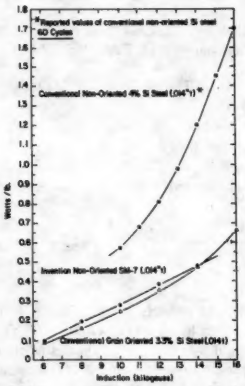
Continuation-in-part of Ser. No. 262,270, May 11, 1981, abandoned. This application Mar. 8, 1984, Ser. No. 587,412
Int. Cl.[4] H01F *1/02*
U.S. Cl. 148—103 **14 Claims**

1. A method for improving the remanence of magnets produced by consolidating a particle charge of a transition metal-rare earth alloy to form a magnet article, said method comprising applying a magnetic field to said particle charge within a container to magnetically align said particles, said magnetic field being applied as a plurality of pulses with each said pulse having a duration not exceeding one second and a power level of at least 50,000 oersted and thereafter consolidating said particle charge to a final density.

4,564,401
METHOD FOR PRODUCING IRON-SILICON ALLOY ARTICLES

George A. Strichman, New Rochelle, N.Y.; Edward J. Dulis, Pittsburgh; Kalatur S. V. L. Narasimhan, Monroeville, both of Pa., and Thomas Lizzi, Zelienople, Pa., assignors to Crucible Materials Corporation, Pittsburgh, Pa.

Filed Sep. 29, 1983, Ser. No. 537,135
Int. Cl.[4] H01F *1/02*
U.S. Cl. 148—104 **19 Claims**


*Reported values of conventional non-oriented Si steel
60 Cycles
Conventional Non-Oriented 4% Si Steel (.014")*
Invention Non-Oriented Si-Fe (.014")
Conventional Grain Oriented 3.3% Si Steel (.014")
Watts/lb.
Induction (kilogauss)

1. A method for producing iron-silicon alloy articles having an improved combination of hot-workability and electrical properties, particularly resistivity, said method comprising producing a molten alloy mass of an iron-silicon alloy from which said article is to be made, gas atomizing said molten alloy mass to form prealloyed particles, rapidly cooling to solidify said particles, hot compacting said particles to form a fully dense article and hot rolling said fully dense article to form sheet.

10. A method for producing an iron-silicon alloy laminate suitable for use in the manufacture of a transformer core, said method comprising producing a molten alloy mass of an iron-silicon alloy from which said laminate is to be made and having a silicon content within the range of 5 to 10% by weight, gas atomizing said molten alloy to form prealloyed particles, cooling to solidify said particles at a cooling rate of about 100° to 100,000° C. per second, hot compacting said particles to form a fully dense article and hot rolling said article to form a sheet.

4,564,402
METHOD FOR PREVENTING DISBONDING OF WELD-CLADDING

Norio Morishige, Yokosuka, and Ryoichi Kume, Yokohama, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 21, 1984, Ser. No. 642,789
Claims priority, application Japan, Aug. 25, 1983, 58-155449
Int. Cl.[4] C21D *1/78*
U.S. Cl. 148—127 **3 Claims**

1. A method for preventing, during cooling to room temperature, hydrogen-induced exfoliation of austenitic stainless steel from a cladding of said stainless steel welded to the inside of a steel reaction vessel, after exposure to a reaction under high temperature and high pressure hydrogen atmosphere, comprising subjecting a reaction vessel having an austenitic stainless steel cladding which would exfoliate if cooled directly to room

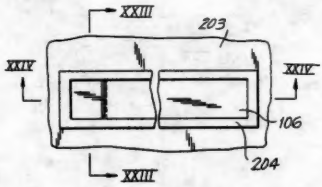
temperature, to cooling to an initial temperature of not lower than 100° C., maintaining said vessel at such temperature for a time sufficient to expel hydrogen from said steel, and thereafter further cooling said vessel.

4,564,403

SINGLE-CRYSTAL SEMICONDUCTOR DEVICES AND METHOD FOR MAKING THEM

Yoshinari Hayafuji; Akashi Sawada; Setsuo Usui, and Akikazu Shibata, all of Yokohama, Japan, assignors to Sony Corporation Research Center, Yokohama, Japan

Filed Jan. 27, 1984, Ser. No. 574,571
Int. Cl.[4] H01L *21/208*
U.S. Cl. 148—171 **8 Claims**



1. A method of making a large, single-crystal semiconductor article, comprising the steps of:

providing a wafer including a substrate having thereon a seed layer of polycrystalline or amorphous material;

exposing a region of said seed layer to a beam of electrons to melt said region;

solidifying said molten region from one end of said region in a first direction and outwardly toward the edges of said region in a second direction substantially normal to said first direction for forming a seed comprising substantially a single crystal in said region; and

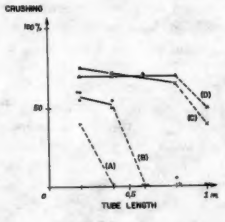
scanning an operating layer of polycrystalline or amorphous material on said substrate in contact with said seed with a beam of electrons having a strip-like configuration by moving said wafer and said beam relative to each other in said second direction to remelt a portion of said seed and to create a molten zone in said operating layer that recrystallizes substantially as a single crystal by lateral epitaxial recrystallization from said seed.

4,564,404

INERT PASTE OF THE NITRATE-FUEL TYPE, EXPLOSIVE PRODUCT OBTAINED THEREFROM BY THE INCORPORATION OF AIR AND PROCESSES OF MANUFACTURE THEREOF

Jacques M. Frémaux, Haisnes, France, and Hans W. Ehrlich, Colchester, United Kingdom, assignors to Societe Anonyme d'Explosifs et de Produits Chimiques, France

Filed Dec. 9, 1983, Ser. No. 559,758
Claims priority, application France, Dec. 10, 1982, 82 20786
Int. Cl.[4] C06B *45/02*
U.S. Cl. 149—21 **11 Claims**



1. Inert, stable and pumpable paste of the water-nitrate-fuel type, said paste being non explosive in itself and not containing a sensitizing amount or form of air, said paste containing: (% by weight)

water	10.00	14.5
ammonium nitrate	84.75	79.65
fuel	4.00	4.39
hydration gums	0.51	1.13
cross linking agent (self cross-linking gum)	0.02	0.06(200–600 ppm)
surface-active agent	0.22	0.44
solvent for the surface active agent	0.11	0.22

4,564,405

PYX PURIFICATION TECHNIQUE

Robert G. Pallanck, Stafford Springs, Conn., assignor to Ensign-Bickford Industries, Inc., Simsbury, Conn.

Filed Jun. 13, 1984, Ser. No. 620,181
Int. Cl.[4] C06B *45/02*
U.S. Cl. 149—21 **17 Claims**

1. A process for synthesizing crystals of 2,6-bis(picrylamino)-3,5-dinitropyridine, the process comprising the steps of:

(a) dissolving 2,6-bis(picrylamino)-3,5-dinitropyridine in dimethyl sulfoxide to form an adduct of 2,6-bis(picrylamino)-3,5 dinitropyridine and dimethyl sulfoxide;

(b) cooling the resultant solution to obtain a slurry of dimethyl sulfoxide and 2,6-bis(picrylamino)-3,5 dinitropyridine adduct;

(c) filtering the slurry to remove excess dimethyl sulfoxide; and

(d) dissociating the dimethyl sulfoxide and 2,6-bis(picrylamino)-3,5 dinitropyridine adduct to form particles of 2,6-bis(picrylamino)-3,5 dinitropyridine.

4,564,406

METHOD OF AND MEANS FOR COMBINATION DESIGN TRANSFER AND APPLICATION OF HEAT REACTIVATABLE ADHESIVE

Chester J. Binks, LaGrange, Ill., assignor to Solar-Kist Corporation, LaGrange, Ill.

Filed Feb. 21, 1984, Ser. No. 581,803
Int. Cl.[4] B32B *31/10*
U.S. Cl. 156—63 **15 Claims**

1. A method of appliquéing, comprising:

supplying a self-supporting dry sheet of heat reactivatable adhesive;

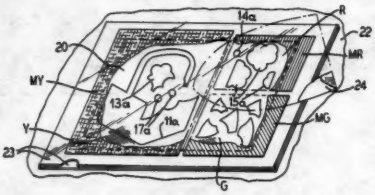
imprinting an appliqué design pattern onto said sheet;

providing appliqué material;

placing said adhesive sheet with said design pattern thereon

onto the back of said appliqué material in assembly therewith;

fusing and laminating said adhesive sheet with said appliqué design pattern thereon onto the back of said appliqué material, and thereby transferring said design pattern by



said laminating of the adhesive sheet onto said appliqué material;

trimming out of said material an appliqué piece in accordance with the transferred appliqué design pattern;

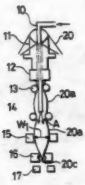
and bonding said piece to a base panel by reactivating the adhesive lamina on the piece.

4,564,407

MANUFACTURING METHOD AND MANUFACTURING EQUIPMENT FOR PLASTIC AIR CELL CUSHIONING MATERIAL

Orihiro Tsuruta, Tomioka, Japan, assignor to Orihiro Co., Ltd., Japan

Filed Apr. 16, 1984, Ser. No. 600,492
Claims priority, application Japan, Nov. 11, 1983, 58-210951
Int. Cl.⁴ B29D *23/00*
U.S. Cl. 156—147 **2 Claims**



1. A method for manufacturing cushioning material consisting of air-filled plastic cells, which comprises the following sequential steps:

(a) forming a single sheet of plastic film into a cylindrical shape;

(b) fusion bonding said cylindrical shape along the entire longitudinal edges thereof to form a cylindrical body;

(c) advancing downwardly said cylindrical body while concurrently fusion bonding the leading end of said body transversely to the downward direction of movement of said body;

(d) introducing air into the open end of said cylindrical body;

(e) intermittently restricting the expansion of said cylindrical body with at least one pair of forming plates transversely to the direction of movement of the body;

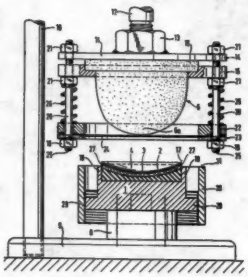
(f) fusion bonding said cylindrical body at predetermined distances from said fusion bonded lead end to form individual, air filed cells in a sequential manner.

4,564,408

PROCESS AND DEVICE FOR COVERING A LENS PREFORM WITH A PROTECTIVE SHEET

Richard Crumbach, Aachen; Heinz-Josef Schilde, Wuerselen, and Helmut Tiedemann, Baesweiler, all of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Aubervilliers, France

Filed May 25, 1984, Ser. No. 614,037
Claims priority, application France, May 25, 1983, 83 08580
Int. Cl.⁴ B29D *11/00*
U.S. Cl. 156—212 **15 Claims**



1. A process for covering a concave face of a lens perform with a transparent plastic covering sheet of transparent plastic, said process comprising the steps of:

positioning said covering sheet over said lens concave face;

superimposing an elastic membrane over said sheet; and

using an elastic pressing element to press said elastic membrane onto said covering sheet and said lens concave face until said entire lens concave surface is homogeneously contacted by said covering sheet, whereby air between said covering sheet and said lens face is eliminated, wherein said pressing step is performed such that said membrane first contacts an entire peripheral edge of said preform and said elastic pressing element subsequently applies pressure to a central portion of said membrane and covering sheet, said pressure being progressively applied in a radially outward direction as said pressing element is applied to said membrane and covering sheet.

4. An apparatus for covering a concave face of a lens preform with a transparent plastic covering sheet, comprising:

a frame;

a die upon which said preform is positioned with said concave face facing upward, said die being mounted on said frame;

a support plate mounted on said frame for movement toward and away from said lens preform;

a convexly curved pressing element fixed to said support plate above said lens preform, whereby said pressing element is movable toward and away from said concave face;

retaining ring means supported by said support plate; and

a normally planar elastic membrane fixed to said retaining ring means and movable toward and away from said concave face with said pressing element, and positioned between said pressing element and said concave face, whereby said membrane presses a peripheral edge of said lens preform when said support plate is moved toward said concave face and prior to contact between said membrane and a central position of said preform due to pressing by said pressing element.

4,564,409
PLANAR CARD MADE OF A THERMOPLASTIC MATERIAL HAVING VISUALLY RECOGNIZABLE SAFETY MARKINGS AND METHOD OF MANUFACTURING SUCH CARD

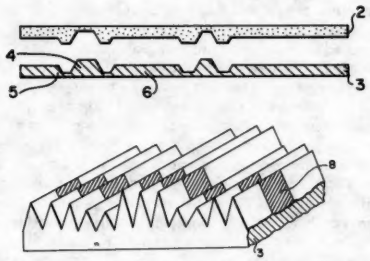
Adolf Kuhl, Oberrieden, Switzerland, assignor to Orell Fussli Graphische Betriebe AG, Zurich, Switzerland

Division of Ser. No. 350,540, Feb. 19, 1982, Pat. No. 4,506,916. This application Jan. 10, 1985, Ser. No. 690,511

Claims priority, application Switzerland, Mar. 3, 1981, 1421/81

Int. Cl.⁴ B32B *31/00;* **B29C** *65/00;* **B28B** *11/08;* **F16L** *7/00*

U.S. Cl. 156—219 **5 Claims**



1. A method of manufacturing a card of a thermoplastic material having planar surfaces and visually recognizable, internal safety markings comprising the steps of embossing a relief structure into an inner surface of a first sheet of transparent thermoplastic material by means of a first embossing mold; embossing a complementary relief structure into an inner surface of a second sheet of opaque thermoplastic material by means of a second embossing mold complementary to the first embossing mold; and laminating said first and second sheets upon each other with their inner surfaces contacting each other to to form an interface, and thereby providing an inseparable body with planar surfaces and an inner relief, whereby though said card said relief structure is visually recognizable as a varying brightness due to varying light absorption of the transmitted light in the opaque sheet.

4,564,410
ADHESIVE APPLICATION APPARATUS

Derek P. Clitheros, Newport Pagnell; David A. Livingstone; David B. Roberts, both of Luton, and Roland Cawthorne, Harpenden, all of England, assignors to General Motors Corporation, Detroit, Mich.

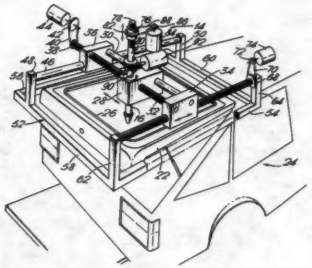
Filed Jun. 28, 1984, Ser. No. 625,454

Claims priority, application United Kingdom, Jul. 2, 1983, 8318038

Int. Cl.⁴ B05C *16/00*

U.S. Cl. 156—356 **6 Claims**

1. An adhesive application apparatus for applying a continuous strip of extrudable adhesive material to the periphery of either a window opening in a motor vehicle or a pane of glass sized to cover said window opening, said apparatus comprising a pressurized supply means connected to a source of said adhesive, the pressurized supply means including a reservoir which contains at least sufficient of said extrudable adhesive material for applying around the entire periphery of said window opening or pane of glass, which reservoir is emptied at a predefined rate during application of said adhesive material to said periphery, and is automatically refilled with adhesive material from a bulk reservoir when said application is not occurring; a dispensing means including an angularly movable nozzle having a tip alignable with said periphery and having a truncated conical-shaped opening across the tip thereof through which the adhesive material is extruded in a strip of predetermined cross-sectional shape upon movement of the nozzle along said periphery with the truncated conical-shaped opening moving parallel to said periphery, said nozzle being movably mounted within a stationary rigid framework surrounding said periphery, said dispensing means being in fluid connection with said pressurized supply means and being movable relative to said rigid framework by drive means, said drive means including three separate drive motors for controlling the movement of said dispensing means relative to said rigid framework in three dimensions all mutually at right angles to one another, each drive motor controlling said movement in one linear dimension, and a fourth drive motor controlling angular movement of said nozzle with respect to said periphery as the nozzle moved around each corner of said window opening or said pane of glass; and a computer numerical control system connected to both the pressurized supply means and said drive means, said computer numerical control system being operable by a predetermined program to exert full automatic control over the pressurized supply means and the drive means so that, when the apparatus is in operation, a predefined quantity of said strip of adhesive material is extruded at said predefined rate from said nozzle on to said periphery, the nozzle of the dispensing means is caused to accurately follow said periphery, and all four of said drive motors are under full positional and speed control exerted by said computer numerical control system with said fourth drive motor particularly controlling angular movement of the nozzle to assure the extrusion of a strip or adhesive material of predetermined cross-sectional area along the periphery and around the corners by maintaining a parallel orientation of said truncated conical-shaped opening with said periphery.



4,564,411
APPARATUS FOR PRODUCING LABELS

Joseph C. Holzer, Liverpool, N.Y., assignor to Gaylord Bros., Inc., Liverpool, N.Y.

Filed Dec. 13, 1983, Ser. No. 560,843

Int. Cl.⁴ B41J *15/16, 15/22, 15/24*

U.S. Cl. 156—387 **39 Claims**

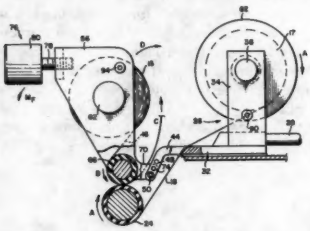
1. An apparatus for producing laminated labels used in combination with a conventional typewriter or printer, the apparatus comprising:

(a) means for rotatably mounting a spool of transparent overlay-tape material having an adhesive surface;

(b) means for rotatably mounting a spool of base-tape material having a printable surface and an opposite protected adhesive surface, said base-tape material mounting means including means for adjustably applying tension against the base-tape material spool independent of said overlay-tape material spool;

(c) friction-feed, pressure-loaded roller means associated with the print head of the typewriter or printer for pulling without slippage the overlay-tape material and the tensioned base-tape material into and through the roller

means at a constant surface speed therebetween and for pressing the adhesive surface of said overlay-tape material into intimate fixed contact with the printable surface of said base-tape material, said roller means including a drive roller, a frictionally surface driven, pressure-loaded feed roller having an outer compressible surface acting against the drive roller, and means for adjusting the friction-force



and pressure-load of said surface-driven feed roller against said drive roller to apply the appropriate material pulling force according to the drive force of the conventional typewriter or printer with which the apparatus is used; and

(d) means for mounting the roller means adjacent the print head of a conventional typewriter or printer for the roller means to receive the printed base-tape material therefrom.

4,564,412

METHOD OF AND APPARATUS FOR APPLYING SEAL STAMPS

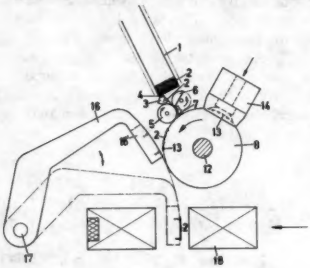
Manfred Oberdorf, Gevelsberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Filed Oct. 26, 1984, Ser. No. 665,361

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1983, 3339555

Int. Cl.⁴ B65C *1/06, 9/10, 9/22*

U.S. Cl. 156—484 **20 Claims**



1. Apparatus for the affixation of stamps to moving articles comprising:

magazine means for receiving and temporarily storing a plurality of stamps;

means for extracting stamps from said magazine;

means for applying an adhesive to a first side of the extracted stamps, said adhesive applying means including:

means defining a generally cylindrically shaped adhesive transfer roller, said roller defining means having a plurality of discrete coaxial surface portions, at least some of said portions being provided with suction ports in the radially outwardly facing surface thereof for connection to a low pressure source and the other of said surface portions being provided with depressions in the radially outwardly facing surface thereof for receiving quantities of adhesive; and

adhesive supply means, said adhesive supply means including a plurality of adhesive delivery channels equal in number to and having a width complementary to said other portions of said roller defining means, an adhesive being supplied to said delivery channels, said adhesive supply means being positioned such that said other roller defining means portions cooperate with said channels during rotation of said transfer roller whereby adhesive will be delivered to said depressions in said roller defining means other portions, said adhesive supply means being located before said extraction means in the direction of rotation of said adhesive transfer roller defining means, said extraction device delivering the stamps to said transfer roller defining means whereby the stamps will be held by the low pressure applied to the suction ports of said some of said surface portions and adhesive will be transferred thereto from the depressions in the other of said surface portions; and

means for conveying stamps from said adhesive applying means to articles which are moving along a path, said conveying means having a pair of spacially displaced arms, simultaneous movement of said arms causing portions thereof to be substantially tangential to said roller defining means surface portions at the points of closest approach therebetween, the stamps being attracted to said arms and being removed from said adhesive applying means transfer roller defining means, said removed stamps being conveyed into position in registration with said path whereby articles moving along said path will contact the side of the stamps having adhesive thereon as the articles pass between said arms.

4,564,413

SHEET SPLICER

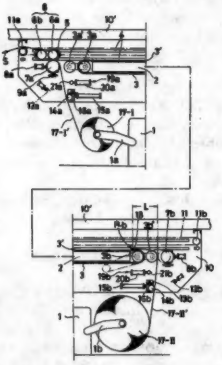
Tamotsu Murakami, Mishima, Japan, assignor to Shizuoka Kogyo Company, Ltd., Fuji, Japan

Filed Jun. 1, 1984, Ser. No. 616,242

Claims priority, application Japan, Sep. 27, 1983, 58-177008

Int. Cl.⁴ B65H *19/18, 19/20*

U.S. Cl. 156—504 **20 Claims**



10. Sheet splicing apparatus, comprising:

a first sheet roll from which a first web of material is being unrolled and conveyed;

a second sheet roll from which a second web of material can be unrolled so as to have a leading edge portion thereof spliced to a trailing edge portion of said first web of material when said first web of material disposed upon said first sheet roll is about to be depleted;

a first roll disposed within the vicinity of said first sheet roll;

a second roll disposed within the vicinity of said second sheet roll;

roller means cyclically movable between said vicinity of said first and second sheet rolls for cyclically cooperating with said first and second rolls in defining a first nip through which said trailing edge portion of said first web of material can be conveyed upon nearing depletion thereof, and a second nip through which a trailing edge portion of said second web of material can be conveyed upon nearing depletion thereof;

adhesive means provided upon said leading edge portion of said second web of material for permitting said leading edge portion of said second web of material to be secured to said trailing edge portion of said first web of material whereby said first and second webs of material can be spliced together; and

cyclically movable conveyor belt means for transporting said leading edge portion of said second web of material from within the vicinity of said second sheet roll into said first nip defined between said roller means and said first roll disposed within said vicinity of said first sheet roll whereby said leading edge portion of said second web of material is spliced to said trailing edge portion of said first web of material within said nip defined between said roller means and said first roll by said adhesive means provided upon said leading edge portion of said second web of material, and for transporting a leading edge portion, having adhesive means thereon, of a third web of material disposed upon a third sheet roll, which has replaced said first sheet roll upon said depletion thereof, from within the vicinity previously containing said first sheet roll into said second nip defined between said roller means and said second roll disposed within said vicinity of said second sheet roll whereby said leading edge portion of said third web of material is spliced to said trailing edge portion of said second web of material within said nip defined between said roller means and said second roll by said adhesive means provided upon said leading edge portion of said third web of material.

4,564,414

MAGNETIC DEVICES, APPARATUS FOR USE IN CONNECTION WITH DRY TRANSFER SHEETS INCORPORATING SUCH DEVICES AND SHEETS FOR USE THEREIN

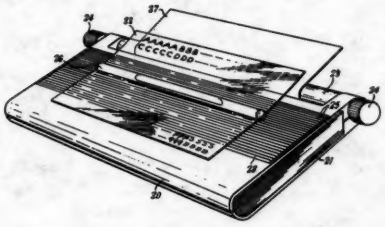
Vazgen Houssian, Union City, and Martin E. Dowzall, Wycoff, both of N.J., assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed May 17, 1983, Ser. No. 493,801

Claims priority, application United Kingdom, May 21, 1982, 8214904

Int. Cl.⁴ G09B *15/06*

U.S. Cl. 156—541 **12 Claims**



1. Apparatus for use in connection with a dry transfer sheet which consists of a base member and a sheetholder member, the sheet-holder member being in the form of an elongated bar having means on one side for attaching a sheet of dry transfer material thereto and its other side being substantially flat and having a rib projecting therefrom and running along the length of the bar, the base member comprising a magnetized material and having a series of evenly spaced parallel grooves therein the longitudinal extent of the grooves being at least as long as the bar, the two members being magnetically attracted one to the other, at least one of such members being permanently magnetized.

4,564,415

PROCESS FOR PRODUCING TERNARY OR QUATERNARY SEMICONDUCTOR COMPOUNDS

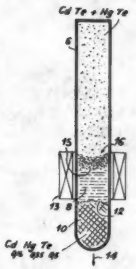
Alain Fillot, St. Ismier; Jean Gallet, Grenoble; Sylvain Paltrier, Meylan, and Bernard Schaub, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 30, 1983, Ser. No. 556,583

Claims priority, application France, Nov. 30, 1982, 82 20053

Int. Cl.⁴ C30B *9/06*

U.S. Cl. 156—604 **8 Claims**



1. A process for producing a semiconductor compound selected from the group consisting of Cd Hg Te and Cd Hg Te Se which comprises the steps of

producing a homogeneous mixture, having a precise composition and corresponding to the compound to be obtained, of Cd Te and Hg Te powders when Cd Hg Te is to be obtained and a mixture selected from the group consisting of (1) Cd Te Se and Hg Te powders and (2) Cd Te and Hg Te Se powders when Cd Hg Te Se is to be obtained;

compacting the mixture by applying pressure;

subjecting the thus compacted mixture to thermal interdiffusion treatment, assisted by a grainwise material transfer, until a homogeneous solid solution of a polycrystalline compound is obtained; and

recrystallizing the compound in monocrystalline form by a single passage through a solvent zone.

4,564,416

METHOD FOR PRODUCING A SEMICONDUCTOR DEVICE

Kazumoto Homma, Sagamihara, and Masaharu Watanabe, Yokosuka, both of Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo and Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, both of, Japan

Division of Ser. No. 169,460, Aug. 16, 1980, abandoned. This application Dec. 8, 1981, Ser. No. 328,685

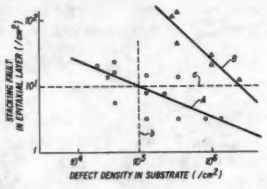
Int. Cl.⁴ C30B *33/00*

U.S. Cl. 156—617 SP **7 Claims**

1. A method for manufacturing a semiconductor device comprising the steps of:

heat-treating a semiconductor substrate at a temperature of 600° C. to 900° C. for a predetermined period of time necessary to produce crystal defects of density of at least $10^5/cm^2$ in said substrate; and

forming an epitaxial layer on said substrate wherein said epitaxial layer has a reduced stacking fault density due to



said crystal defect density of at least $10^5/cm^2$ in said substrate.

4,564,417

METHOD OF MANUFACTURING AN OPTICAL COUPLING DEVICE

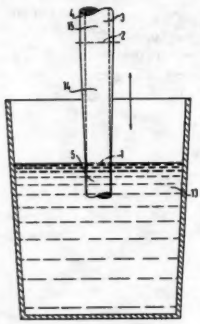
Josef Schoen, and Rudolf Hoffmann, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 4, 1983, Ser. No. 538,964

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1982, 3239011

Int. Cl.⁴ B44C *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—633 **10 Claims**



1. A method for manufacturing an optical coupling device comprising a large number of glass fiber optical waveguides arranged in a bundle with the ends having a very small space therebetween and the end faces of the waveguides of the bundle being held in optical contact with a mixing element, said method comprising the steps of providing a plurality of optical waveguides having a cladding of quartz glass of a given thickness; etching each of the fibers to form an end zone with a thin cladding connected by a transition zone having a cladding of increasing thickness from the thin cladding to the given thickness by holding the waveguide to extend perpendicularly to a surface of an etching solution with the end zone continually in the solution and by reciprocating the fiber along the axis to intermittently immerse the transition zone of the fiber into the solution; and assembling a plurality of the etched fiber waveguides into a bundle with the end zones adjacent each other and with a minimum spacing therebetween.

4,564,418

PAPER CONVERTING MACHINE VACUUM CYLINDER

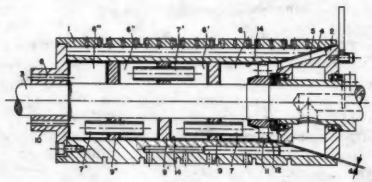
Martin Blümle, Güllesheim, Fed. Rep. of Germany, assignor to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co. KG, Neuwied, Fed. Rep. of Germany

Continuation of Ser. No. 554,983, Nov. 25, 1983, abandoned. This application Jan. 28, 1985, Ser. No. 695,745

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1982, 3243778

Int. Cl.⁴ D21F *3/10;* **F01N** *1/10*

U.S. Cl. 162—368 **2 Claims**



1. In a high speed paper converting machine vacuum cylinder wherein a control head is attached at its control surface directly to the end face of a vacuum cylinder or inserted into the vacuum cylinder with an accurate fit and the canal for atmospheric pressure equalization is open on the control surface of the control head toward the interior of the vacuum cylinder, the improvement comprising:

the interior of said vacuum cylinder being subdivided as a reflection sound attenuator into a plurality of annular attenuation chambers interconnected by offset tubes which overlap each other in the projection, and openings in the side of the vacuum cylinder opposite the control head connecting the last attenuation chamber to the atmosphere,

so as to suppress the noise resulting from the fresh air inflow during atmospheric pressure equalization at the completion of the vacuum cycle of the vacuum cylinder.

4,564,419

NOZZLE PLATE CONSTRUCTION FOR UNDERJET COKE OVENS

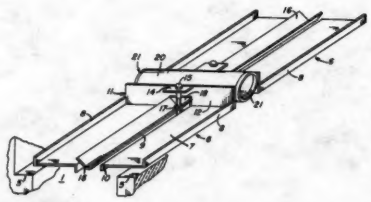
Heinz Spindeler; Folkard Wackerbarth, and Gerd Halbherr, all of Bochum, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Dec. 7, 1984, Ser. No. 679,384

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1983, 3347664

Int. Cl.⁴ C10B *1/04*

U.S. Cl. 202—123 **13 Claims**



1. A nozzle plate construction for underjet coke ovens for distributing and metering combustion-supporting air supplied upwardly to regenerators through a sole flue which extends parallel to a coke oven chamber axis, the sole flue being closed at its top by plate elements which are formed with apertures

therein and disposed releasably in end-to-end relationship, each of said plate elements being in the form of a trough having a plane base plate and low longitudinal side walls, at least one longitudinal gap formed in the base plate, and a metering element for each longitudinal gap mounted at its ends so as to be adjustable in its distance from the plane of said base plate.

4,564,420

COKE OVEN BATTERY

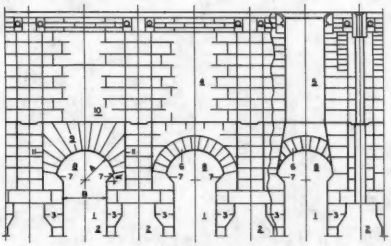
Heinrich Spindeler; Folkard Wackerbarth; Horst Kuhlmann; Helmut Dohle, and Horst Althaus, all of Bochum, Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. GmbH, Bochum, Fed. Rep. of Germany

Filed Dec. 5, 1983, Ser. No. 558,020

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1982, 3245551

Int. Cl.[4] C10B *5/02, 29/02*

U.S. Cl. 202—139 **7 Claims**



1. A coke oven battery including a plurality of coking chambers disposed in an alternate relationship with heating flues which, like the coking chambers, extend transversely of the length of the coke oven battery, the heating flues being bounded by vertical heating walls separating the coking chambers from the heating flues, each coking chamber having a generally rectangular cross section, and a top arch above each coking chamber forming a mushroom-shaped gas-collecting chamber extending along the top of the coking chamber, said top arch being sprung from the top of the heating walls for the coking chamber and having an inner-arched surface defined by a segment of a circle whose diameter is greater than the internal width of the coking chamber, said arch including arched wall portions above the two heating walls bounding the coking chamber and extending to the spring of the arch, said arched wall portions having wall surfaces extending in an upwardly- and outwardly-inclined manner to define a width of the gas-collecting chamber which is wider than the width of the coking chamber at the joint with said inner-arched surface to thereby form said mushroom-shaped gas-collecting chamber.

4,564,421

ASCENSION PIPE FOR COKE OVENS

Theo Koddenberg, Bochum, and Franz-Josef Hegemann, Castrop-Rauxel, both of Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. GmbH, Bochum, Fed. Rep. of Germany

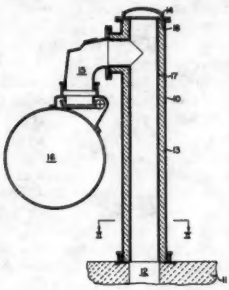
Filed May 21, 1982, Ser. No. 380,548

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1981, 3124356

Int. Cl.[4] C10B *27/00*

U.S. Cl. 202—254 **5 Claims**

1. An ascension pipe for coke ovens comprising an outer shell, a refractory lining on the inner periphery of the outer shell, and a tube of heat-resistant metal on the inner periphery of the refractory lining, whereby the formation of deposits on the tube during operation of a coke oven will be minimized,



which deposits can be removed readily by vertically-guided scrapers without risk of damaging the lining.

4,564,422

METHOD AND APPARATUS FOR DETECTION OF EROSIVE CAVITATION IN AN AQUEOUS SOLUTION

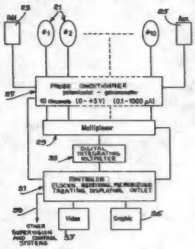
Raynald Simoneau, St-Bruno, Canada, and Lucien Chincholle, Verrières le Buisson, France, assignors to Hydro-Quebec, Montreal, Canada and Centre National de la Recherche Scientifique, Paris, France

Filed Aug. 31, 1983, Ser. No. 528,220

Claims priority, application Canada, Aug. 16, 1983, 434664

Int. Cl.[4] G01N *27/46*

U.S. Cl. 204—1 T **26 Claims**



1. Method of quantitatively and directly measuring the intensity of erosive cavitation present in an aqueous solution, said method comprising:

mounting, in said solution, a set of electrodes, comprising a reference electrode, at least one auxiliary electrode, and at least one working electrode made of a metal selected from metals capable of forming highly insulating oxide films becoming thicker by ionic mobility under the action of an electric field, the said at least one working electrode being located in a zone where cavitation is to be measured;

incubating the said at least one working electrode, prior or after its mounting, by subjecting it to mechanical cavitation for a period of time sufficient to obtain stabilization of the erosive cavitation phenomenon;

applying a constant anodic voltage onto said at least one working electrode after the incubation step, by means of said auxiliary and reference electrodes;

measuring the intensity of the anodic current; and

detecting and measuring any variation in the said intensity of the current, each variation thus measured being directly related to the intensity of erosive cavitation in the said zone.

8. A device for quantitatively and directly measuring the intensity of erosive cavitation present in an aqueous solution comprising:

a set of electrodes mounted in the said solution and comprising a reference electrode, at least one auxiliary electrode, and at least one working electrode made of a metal selected from those capable of forming highly insulating oxide films becoming thicker by ionic mobility under the action of an electric field, the said at least one working electrode being located in a zone or zones where cavitation is to be measured;

means for incubating the said at least one working electrode by subjecing it to mechanical cavitation for a period of time sufficient to obtain stabilization of the erosive cavitation phenomena:

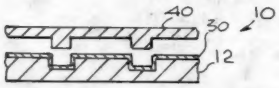
means for measuring the intensity of the anodic current and to detect and measure any variation in the intensity of the said current after having previously incubated said at least one working electrode, each variation thus measured being directly related to the intensity of erosive cavitation in the measuring zone.

4,564,423

PERMANENT MANDREL FOR MAKING BUMPED TAPES AND METHODS OF FORMING

William P. Dugan, Pomona, Calif., assignor to General Dynamics Pomona Division, Pomona, Calif.

Filed Nov. 28, 1984, Ser. No. 675,791
Int. Cl.[4] C25D *1/20, 1/22, 17/10*
U.S. Cl. 204—12 **16 Claims**



1. The method of forming a reusable mandrel for producing bumped circuit sheets therefrom comprising the steps of:

providing a metal base plate;

forming a plurality of cavities on one surface thereof in a predetermined pattern corresponding to the desired locations of bumps on said sheet by selectively plating regions of the base plate to develop a plated layer with cavities therein;

plating a thin layer of a metal comprising nickel on said surface to coat the surface and the cavities therein; and

passivating the exposed surface of the plated layer to render it non-adhering with copper plating.

4,564,424

METALLIZATION OF ELECTRICALLY INSULATING POLYMERIC FILM SUBSTRATES

Robert Cassat, Ternay, and Maurice Alliot-Lugaz, Lyons, both of France, assignors to Rhone-Poulenc Recherches, Courbevoie, France

Filed Apr. 16, 1984, Ser. No. 600,833
Claims priority, application France, Apr. 15, 1983, 83 06405
Int. Cl.[4] C25D *5/56*
U.S. Cl. 204—20 **35 Claims**

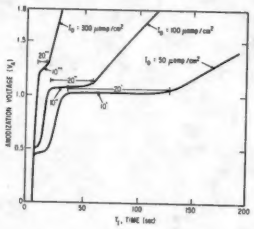
1. A process for conductively metallizing an electrically insulating thermoplastic or thermoplastic phase polymeric film substrate, comprising (1) shaping into said film substrate an intimate homogeneous admixture of a film-forming thermoplastic or thermoplastic phase polymer matrix having from 10 to 70 percent by total weight of said admixture of finely divided, non-conductive metal oxide particles uniformly distributed therein, (2) disrupting at least one face surface of said shaped film substrate to expose thereon a plurality of said finely divided, non-conductive metal oxide particles, and (3) treating said at least one disrupted face surface with a reducing agent to reduce said exposed metal oxide particles into a layer of electrically conductive free metal, whereby said at least one face surface is rendered electrically conductive.

4,564,425

ELECTROCHEMICAL ETCHING OF A MERCURY-CADMIUM-TELLURIDE SUBSTRATE

Bruce K. Janousek, Los Angeles, and Richard C. Carscallen, Torrance, both of Calif., assignors to The Aerospace Corporation, Los Angeles, Calif.

Filed Apr. 4, 1983, Ser. No. 481,894
Int. Cl.[4] C25D *11/32*; C25F *3/12, 3/30*
U.S. Cl. 204—34.5 **15 Claims**



1. A method of electro etching a substrate electrode having mercury-cadmium-telluride components, comprising:

(a) applying current density at a predetermined level within the range of 10–80 μamp/cm^{-2} to the substrate electrode that has been immersed in an electrolyte having a viscosity element of ethylene glycol and a pH element of potassium hydroxide whose concentrations are inversely related to enable the components on the surface of the electrolyte to dissolve into the electrolyte; and

(b) reducing the concentration of said dissolved components in the electrolyte that are spatially proximate to the substrate electrode for disallowing precipitation of said dissolved components onto the surface of the electrode.

4,564,426

PROCESS FOR THE DEPOSITION OF PALLADIUM-NICKEL ALLOY

Timothy P. Henning, Endwell, and Robert D. Topa, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1985, Ser. No. 723,371
Int. Cl.[4] C25D *3/56*
U.S. Cl. 204—44.6 **17 Claims**

1. An electroplating aqueous bath for depositing palladium-nickel alloy which comprises:

(a) about 9 to about 15 grams per liter of palladium ion derived from palladosammine chloride;

(b) about 10 to about 24 grams per liter of nickel ion;

(c) about 10 to about 50 grams per liter of ammonium sulfate;

(d) about 10 to about 50 grams per liter of ammonium chloride;

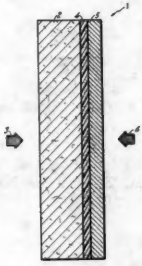
(e) and sufficient ammonium hydroxide to provide a pH of about 7.0 to about 8.3 and to solubilize the palladium and nickel metal ions into soluble ammonia complexes.

4,564,427

CIRCULATING ELECTROLYTE ELECTROCHEMICAL CELL HAVING GAS DEPOLARIZED CATHODE WITH HYDROPHOBIC BARRIER LAYER

Gary A. Gruver, South Windsor, and Harold R. Kunz, Vernon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 24, 1984, Ser. No. 686,178
Int. Cl.[4] C25B *1/34, 11/06*
U.S. Cl. 204—98 6 Claims



4. A method of electrolyzing solutions of halide containing compounds in circulating electrolyte electrochemical cells that contain electrolyte, an anode, a gas depolarized cathode and means to separate the two, by maintaining the electrolyte in contact with the cathode and anode, maintaining a supply of a reactive oxidant gas at the cathode, maintaining a supply of a reductant at the anode, and passing a direct electric current through the cell, causing reduction of the oxidant gas at the cathode and oxidation of the reductant at the anode, wherein the improvement comprises utilizing a gas depolarized cathode comprising:

(a) a carbonized fiber ribbed porous substrate;

(b) a fluorocarbon polymer layer containing carbon particles bonded to the porous substrate; and

(c) a layer of an oxygen reducing catalyst bonded to said fluorocarbon polymer layer;

resulting in the prevention of electrolyte leakage through the cathode when the electrolyte pressure is up to three pounds per square inch above ambient.

4,564,428

AMMONIATED ETCHING SOLUTION AND PROCESS FOR ITS REGENERATION UTILIZING AMMONIUM CHLORIDE ADDITION

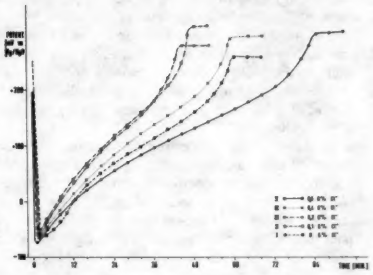
Leander Fürst, Jülich; Walter Holzer, Meersburg, and Bertel Kastening, Hamburg, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Jun. 26, 1984, Ser. No. 624,585
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1983, 3324450
Int. Cl.[4] C25C *1/12*
U.S. Cl. 204—107 9 Claims

5. Process for regenerating an etching solution containing an etching agent and an alkaline ammonium salt having an oxygen-containing anion which is not a reducing agent, comprising the steps of:

incorporating into said solution a quantity of chloride which produces a chlorine ion content in said solution not less than 0.05% and not more than 0.4% by weight;

passing a gas containing free oxygen through said solution for oxidation thereof, and



electrolyzing at least a circulated portion of said solution through an electrolysis cell and thereby cathodically depositing etched-away metal out of said solution.

4,564,429

METHOD OF ELECTROCHEMICALLY ROUGHENING ALUMINIUM SURFACES IN THE MANUFACTURE OF OFFSET PRINTING PLATES

Wolf-Rüdiger Depiereux, Allemannenweg 3, 5160 Düren, Fed. Rep. of Germany

Filed Oct. 9, 1984, Ser. No. 658,808
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1983, 3339410
Int. Cl.[4] C25F *3/04*
U.S. Cl. 204—129.75 12 Claims

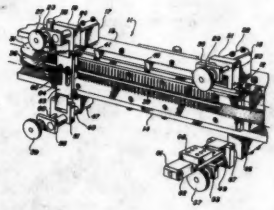
1. A method of electrochemically roughening the surfaces of aluminium material comprising passing the material to be roughened as a continuous band through an electrolyte bath consisting essentially of nitric acid, boric acid, water and from 3 to 15 g/l of aluminium under an alternating current and varying the degree of surface roughness from fine to coarse by varying the density of the alternating current from 15 and 90 A/dm^2.

4,564,430

CONTINUOUS CONTACT PLATING APPARATUS

Jeffery E. Bacon, Long Beach; James E. Craig, South Pasadena, and Mark K. Pedersen, Yorba Linda, all of Calif., assignors to Robbins & Craig Welding & Mfg. Co., South El Monte, Calif.

Filed Sep. 25, 1984, Ser. No. 654,760
Int. Cl.[4] C25D *17/00, 17/14*
U.S. Cl. 204—206 17 Claims



1. A selective contact plater for continuously plating a plurality of zones, comprising:

a manifold, having plating solution therein, with a header having at least one opening for allowing the solution to pass through;

an anode mounted in close proximity to the opening in the

header so that all plating solution leaving the manifold must pass over the anode;

a slide bar sealably mounted to the header over the anode and the opening in the header, said slide bar having openings therein for directing flow of the plating solution from the manifold after it passes over the anode;

a continuous loop of material that is structurally stable and inert to the plating solution, having openings therein that are related to the openings in said slide bar, said loop contacting said slide bar and moving lengthwise along the surface thereof;

porous material for absorbing the plating solution fixedly mounted to said continuous loop of stable and inert material overlaying the openings therein, on the side opposite to the one contacting said slide bar; and

means for moving a series of parts to be selectively plated past said porous material along its length so that the areas to be plated on each part contacts the porous material.

4,564,431

TW-ELECTROEROSION MACHINES WITH DOUBLE-FLOATING NOZZLE ASSEMBLIES

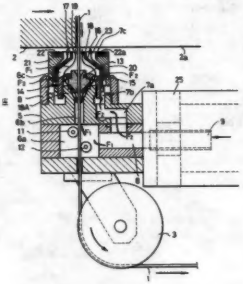
Kazuyoshi Miyano, Yokohamashi, Japan, assignor to Inoue-Japax Research Incorporated, Japan

Filed Oct. 11, 1984, Ser. No. 660,865

Claims priority, application Japan, Oct. 11, 1983, 58-189538

Int. Cl.⁴ C25D *17/00*

U.S. Cl. 204—224 M **2 Claims**



1. An electroerosion machine having a pair of fluid delivery assemblies disposed at opposite sides of a conductive workpiece traversed by an axially traveling wire-like electrode for discharging a machining liquid medium along the electrode into a machining zone in the workpiece, at least one of the assemblies comprising:

a hollow base member having a first and second internal fluid passage traversed by a first and a second pressurized inlet flow of the liquid medium, respectively;

an inner movable nozzle constituted by a first movable hollow body supported by said base member so as to surround the traveling electrode and ending with an outlet portion forming a first annular face adjacent the workpiece and defining a principal nozzle orifice for discharging the liquid medium of said first inlet flow about the electrode into constricted fluid flow passages defined around the electrode adjacent the machining zone, said first hollow body being movably supported by said base member so as to be thrustable outwards thereof under pressure of the liquid medium flowing through said first internal fluid passage to urge said first annular face towards engagement with the workpiece against pressure of the discharged liquid medium flowing through said constricted flow passages; and

an outer movable nozzle constituted by a second movable hollow body supported by said base member so as to be movable independently of said first hollow body and to surround said first hollow body and ending with an outlet portion forming a second annular face adjacent the workpiece and defining with the first-mentioned outlet portion an annular, auxiliary nozzle orifice for discharging the liquid medium of said second inlet flow about the liquid medium being discharged through said principal nozzle orifice, said second hollow body being supported by said base member so as to be thrustable outwards thereof to urge said second annular face towards engagement with the workpiece against pressure of the discharged liquid medium flowing between the second annular face and the workpiece.

4,564,432

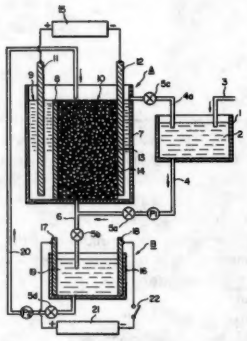
APPARATUS FOR RECOVERING METALS DISSOLVED IN A SOLUTION

Hiroshi Nagai, and Yoshinori Kanno, both of Yokohama, Japan, assignors to Nanao Kogyo Co., Ltd., Yokohama, Japan

Filed Jul. 25, 1983, Ser. No. 516,793

Int. Cl.⁴ C25D *21/18;* **C25C** *7/08, 1/20*

U.S. Cl. 204—237 **4 Claims**



1. An apparatus for recovering metal in a solution comprising:

an electrolyzing depositing device means comprised of an electrolytic cell, a diaphragm dividing said cell into compartments, electrodes comprising a main anode and main cathode disposed in each respective compartment, a mixture of conductive and non-conductive particles in each of said compartments, said conductive particles being arranged in each compartment to have the same polarity of said electrodes in each respective compartment without causing bipolarization, a power source for applying an electric current through said electrolytic cell to deposit said metals dissolved in said solution on said conductive particles by reaction of said solution with said electrodes;

a dissolving chamber having an aqueous solution of cyanide for dissolving said metals deposited on said particles in the presence of air, said dissolving chamber being formed by adding said aqueous solution of cyanide to said cathode compartment of said electrolyzing depositing device means, said cathode compartment being open to the air;

an electrolyzer recovering device means having an anode and a cathode for recovering said metals dissolved in said aqueous solution of cyanide, a second power source for applying a current to said electrolyzer recovering device means to electrolize said aqueous solution of cyanide, said metals being recovered on said cathode of said electrolyzer recovering device means; and pipe means connecting said dissolving chamber to said electrolyzer recovering device means whereby said aqueous solution of cyanide containing said dissolved metals is introduced into

said electrolyzer recovering device means from said dissolving chamber through said pipe means.

4,564,433

BIPOLAR ELECTRODE

Waltraud Werdecker, Hanau, and Peter Fabian, Freigericht, both of Fed. Rep. of Germany, assignors to Heraeus Elektroden GmbH, Hanau, Fed. Rep. of Germany

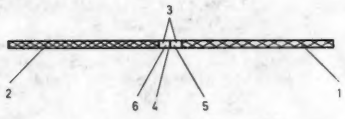
PCT No. PCT/EP83/00265, § 371 Date Jun. 21, 1984, § 102(e) Date Jun. 21, 1984, PCT Pub. No. WO84/01789, PCT Pub. Date May 10, 1984

PCT Filed Oct. 8, 1983, Ser. No. 626,860

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1982, 3239535

Int. Cl.⁴ C25B *9/00*

U.S. Cl. 204—254 **11 Claims**



1. Bipolar electrode in flat, particularly plate form, especially for use in electrochemical processes such as chlorate electrolysis, consisting of three elements, namely

a plate-like anode (1);

a plate-like cathode (2), the cathode and anode, each consisting of metal which cannot be welded together; and

an intermediate piece (3) joining the anode and cathode edge-to-edge,

wherein

the intermediate piece consists of a two-part (5, 6) composite element (3) having a first anode part (5) consisting of the material of the anode and a second cathode part (6) consisting of the material of the cathode,

said first anode part and said second cathode part being joined together by an intermetallic phase bond of materials formed by at least one of:

hot isostatic pressure;

explosion-plating;

diffusion-welding,

of said first anode part and said second cathode part into said composite element;

the anode part (5) of the intermediate composite element (3) of the composite intermediate piece (3) and the cathode part (6) of the composite intermediate piece being joined, respectively, to the anode (1) and the cathode (2) by welding to facing side edges of the anode and cathode, respectively, whereby the bipolar electrode will be located essentially in a single plane with the intermediate piece (3) between the anode and the cathode in essentially said plane.

4,564,434

ELECTRODE FOR ELECTROLYSIS OF SOLUTIONS OF ELECTROLYTES

Vladimir B. Busse-Machukas, Izmailovsky bulvar, 37, kv. 27; Florenty I. Lvovich, I Nizhne-Mikhailovsky proezd, 16, kv. 55; Evdokia K. Spasskaya, Vishnyakovskaya ulitsa 6, korpus 3, kv. 97; Vladimir L. Kubasov, Kirovogradskaya ulitsa, 4, korpus 2, kv. 135; Anatoly F. Mazanko, Stavropolskaya ulitsa, 56, korpus 1, kv. 73; Ernest A. Druzhinin, Gvardeiskaya ulitsa, 4, kv. 32; Alexandr N. Martynov, Yakornava ulitsa, 10, korpus 1, kv. 60, and Ljudmila N. Nelipa, bulvar Matrosa Zheleznyaka, 11, kv. 2, all of, Moscow, U.S.S.R.

Filed Sep. 28, 1984, Ser. No. 656,163

Int. Cl.⁴ C25B *11/00*

U.S. Cl. 204—290 F **3 Claims**

1. An electrode for electrolysis of solutions of electrolytes comprising a support of a passivated metal, a coating applied onto said support consisting of a mixture including titanium oxide, ruthenium oxide and iridium oxide, wherein the molar ratio of titanium oxide to the total of oxides of iridium and ruthenium is equal to 1–3:1 at a molar ratio of iridium oxide to ruthenium oxide equal to 0.75–3:1.

4,564,435

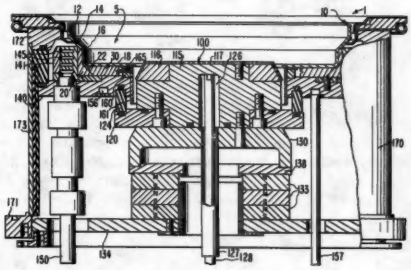
TARGET ASSEMBLY FOR SPUTTERING MAGNETIC MATERIAL

Charles E. Wickersham, Columbus, Ohio, assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed May 23, 1985, Ser. No. 738,205

Int. Cl.⁴ C23C *14/00*

U.S. Cl. 204—298 **8 Claims**



1. An annular sputter coating target assembly for use in sputter coating apparatus, said annular target assembly comprising:

a sputter target piece having:

a first portion of substantially right cylindrical shape,

a second portion of substantially right cylindrical shape of smaller diameter than said first portion,

a third portion interconnecting said first and second portions and having a truncated conical shape, and

a fourth portion extending radially inward from said second portion and having a substantially planar shape, all of said four portions being made of magnetic material; and

a backing structure on the side of said sputter target piece opposite the surface from which sputtering is to occur, said backing structure being made of nonmagnetic material.

4,564,436

APPARATUS FOR MEASURING THE DEGREE OF SENSITIZATION OF METAL ARTICLES

Giovanni Buzzanca, Bergamo; Camillo Ronchetti, Milan; Franco Uberti, Milan, and Renato Anzani, Milan, all of Italy, assignors to CISE-Centro Informazioni Studi Esperienze S.p.A., Milan, Italy

Filed May 29, 1985, Ser. No. 739,015

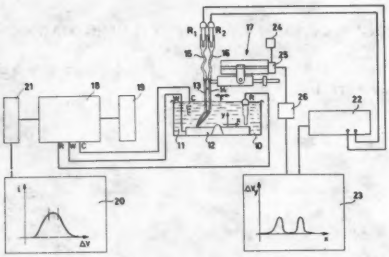
Claims priority, application Italy, Jun. 1, 1984, 21225 A/84

Int. Cl.⁴ G01N *27/02*

U.S. Cl. 204—400 **4 Claims**

1. An apparatus for measuring the degree of sensitisation of metal articles, comprising a cell containing an electrochemical solution which wets at least a portion of the metal article under measurement, an electrical contact adapted to be connected to a test-piece acting as a first electrode, a second counter-electrode unit immersed in the electro-chemical solution, a third reference electrode unit immersed in the electrochemical solution in proximity to said portion under measurement, means for feeding an electric current through said first electrode unit and said second counter-electrode unit, and means for controlling said feed means in such a manner as to impose a linear variation in the potential difference between said first electrode unit and said third reference electrode unit, characterised by compris-

ing a fourth and a fifth electrode unit which are secured in such a manner as to maintain a constant distance apart and are supported by a support and drive assembly which drives them along a surface of the portion of the metal article, said fourth and fifth electrode units having respective sensing ends dis-



posed along an axis which remains substantially perpendicular to said surface during the driving of said fourth and fifth electrode units along it, one of said sensing ends resting on said surface, means also being provided for measuring the potential difference between said fourth and fifth electrode units as a function of their position along said surface.

4,564,437

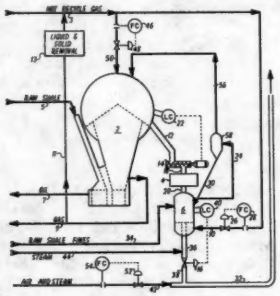
PROCESS FOR RETORTING OIL SHALE WITH FLUIDIZED RETORTING OF SHALE FINES

Roland F. Deering, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 510,402, Jul. 5, 1983, Pat. No. 4,515,679, which is a continuation-in-part of Ser. No. 451,602, Dec. 20, 1982, Pat. No. 4,448,668. This application Jul. 2, 1984, Ser. No. 626,673

Int. Cl.[4] C10G *1/02*

U.S. Cl. 208—11 R **43 Claims**



1. A process for retorting raw hydrocarbon-containing fines, which process comprises:

(1) retorting hydrocarbon-containing particles of a size not readily fluidizable in a retorting zone by contacting said particles at an elevated temperature with a first recycled portion of an eduction gas comprising (a) recycled hydrocarbon vapors educed from said particles in said retorting zone and (b) hydrocarbon vapors educed in step (4) and recovered in step (5) hereinafter;

(2) crushing hot, uncombusted particles removed from said retorting zone in a crushing zone to a size more readily fluidizable;

(3) maintaining hot, crushed, uncombusted particles removed from said crushing zone in a fluidization zone as a fluidized bed under substantially non-combustive conditions and fluidized with a gas comprising a second recycled portion of the eduction gas;

(4) introducing raw hydrocarbon-containing fines into said fluidization zone so as to educe hydrocarbon vapors from said fines;

(5) recovering the educed hydrocarbons vapors from said fluidization zone; and

(6) recovering retorted particulates from said fluidization zone.

4,564,438

STYRENE-DIALKYL MALEATE COPOLYMERS AS DEWAXING AGENTS

Sophia Wang, Houston, and Alan A. Millard, Richmond, both of Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed May 31, 1985, Ser. No. 739,644

Int. Cl.[4] C10G *73/04*

U.S. Cl. 208—33 **4 Claims**

1. A solvent dewaxing process of the type wherein a waxy lubricating oil is treated with a dewaxing solvent and a dewaxing aid, the improvement which comprises using as the dewaxing aid a styrene dialkyl maleate copolymer wherein the alkyl side chain group contains from C_{16}–C_{24}+ carbon atoms, said copolymer having a molecular weight within the range of 10,000–150,000.

4,564,439

TWO-STAGE, CLOSE-COUPLED THERMAL CATALYTIC HYDROCONVERSION PROCESS

Christopher W. Kuehler, Larkspur, and Arthur J. Dahlberg, Rodeo, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 29, 1984, Ser. No. 625,937

Int. Cl.[4] C10G *65/12*

U.S. Cl. 208—59 **16 Claims**

1. A two-stage, close-coupled process for hydroprocessing a heavy hydrocarbonaceous feedstock at least 30 volume percent of which boils above 1000° F. and having greater than 100 parts per million by weight total metal contaminants to produce high yields of transportation fuels boiling below 650° F., which comprises:

(a) introducing said feedstock and dispersed contact particles having activity sufficient to suppress adverse coke formation under coking conditions and having demetalizing activity, into a first-stae hydrothermal zone in the presence of hydrogen; wherein said feedstock and contact particles are introduced into said hydrothermal zone under conditions sufficient to substantially demetalate said feedstock and to convert a significant amount of the hydrocarbons in said feedstock boiling above 1000° F. to hydrocarbons boiling below 1000° F.;

(b) rapidly and without substantial reduction of pressure through the system passing a substantial portion of the substantially demetalated, contact particle-entrained effluent of said first-stage hydrothermal zone directly into a second-stage catalytic reaction zone at a reduced temperature relative to said first-stage hydrothermal zone and contacting said effluent with hydroprocessing catalyst under hydroprocessing conditions, including a temperature in the range of 650° F. to 800° F.; and

(c) recovering the effluent from said catalytic reactor zone.

4,564,440

VISCOSITY INDEX IMPROVEMENT IN DEWAXED LUBE BASESTOCK BY PARTIAL DESULFURIZATION IN HYDROTREAT BED

William E. Garwood, Haddonfield, N.J.; William C. Starr, Wilmington, Del., and John W. Walker, Sewell, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,510
Int. Cl.[4] C10G *65/12, 67/04*
U.S. Cl. 208—87 14 Claims

1. A process for preparing a high quality lube base stock oil in high yield and of improved viscosity index from waxy crude oil, which comprises:

extracting a distillate fraction that boils within the range of 600°–1100° F. or deasphalted short residuum fraction of said waxy crude with a solvent selective for aromatic hydrocarbons to yield a raffinate;

mixing the raffinate with hydrogen and contacting the mixture at a temperature of 500°–675° F. with a dewaxing catalyst comprising an aluminosilicate zeolite having a silica/alumina ratio of at least about 12 and a constraint index of about 1 to about 12, thereby converting wax contained in the raffinate to lower boiling hydrocarbons; and

cascading dewaxed raffinate to a hydrotreating zone wherein the dewaxed raffinate is contacted in the presence of hydrogen with a hydrotreating catalyst comprising hydrogenation component on a non-acidic support, hydrotreating at a temperature of about 625°–700° F. and a hydrogen partial pressure of about 200–700 psig so as to partially desulfurize said dewaxed raffinate by about 30–90% with less than about 5 weight percent loss of yield in the lube range.

4,564,441

HYDROFINING PROCESS FOR HYDROCARBON-CONTAINING FEED STREAMS

Simon G. Kukes; Edward L. Sughrue, II, and Robert J. Hogan, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 520,780, Aug. 5, 1983, abandoned. This application May 21, 1984, Ser. No. 612,539
Int. Cl.[4] C10G *45/08, 47/12, 49/04*
U.S. Cl. 208—108 60 Claims

1. A process for hydrofining a hydrocarbon-containing feed stream comprising the steps of:

introducing a suitable quantity of a suitable decomposable compound of a metal selected from the group consisting of copper and the metals of Group V-B, Group VI-B, Group VII-B and Group VIII of the Periodic Table into said hydrocarbon-containing feed stream; and

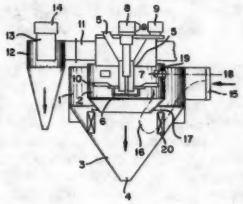
contacting said hydrocarbon-containing feed stream containing said decomposable compound under suitable hydrofining conditions with hydrogen and a suitable refractory inorganic material, wherein the concentration of transition metals selected from the group consisting of the metals of copper and Group V-B, Group VI-B, Group VII-B and Group VIII of the Periodic Table in said refractory inorganic material is less than about 1 weight-%, based on the weight of said refractory inorganic material, when said refractory inorganic material is initially contacted with said hydrocarbon-containing feed stream, and wherein said decomposable compound is selected from the group consisting of carbonyls and dithiocarbamates.

4,564,442

OPERATING PROCEDURE AND SIFTER FOR THE SIFTING OF CEMENT

Heinz Jäger, Nevelstrasse 40, 4630 Bochum 1, Fed. Rep. of Germany

Continuation of Ser. No. 546,888, Oct. 31, 1983, abandoned. This application May 28, 1985, Ser. No. 738,500
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1982, 3240793
Int. Cl.[4] B07B *9/02*
U.S. Cl. 209—148 16 Claims



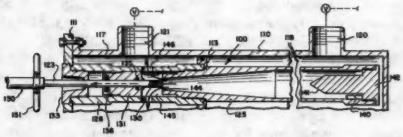
1. In a method for operating a circulating-air sifter particularly a cyclone circulating-air sifter for sifting cement, wherein the material to be sifted is distributed in a rising sifting air-stream which separates the fine material from the material to be sifted by entraining the fine material in the rising sifting air-stream with the coarse material not entrained by the sifting air-stream precipitating into the sifter and discharged therefrom, wherein the entrained fine material is separated from the air-stream and the air-stream recirculated to the sifter for further sifting of material, the improvement comprising dividing the circulating air-stream into a primary air-stream which is recirculated to the sifter for further sifting of material and a secondary air-stream which branches off from said circulating air-stream before said entrainment of the fine material in the rising sifting air-stream and combines with the primary air after said entrainment of the fine material in the rising sifting air-stream, said primary air-stream combined with said secondary air-stream continuing to rise upwardly and discharging through the sifter, the combined air steam then passing through ducts into external cyclone separators preventing deposition of entrained material in the ducts leading to the external cyclone separators, said primary and secondary air-streams being the only source of circulated air.

4,564,443

REVERSE CENTRIFUGAL CLEANING OF PAPER MAKING STOCK

Terry L. Bliss, Middletown, Ohio, assignor to The Black Clawson Company, Middletown, Ohio

Continuation of Ser. No. 513,579, Jul. 14, 1983, abandoned, which is a continuation-in-part of Ser. No. 384,835, Jun. 4, 1982, abandoned. This application Apr. 30, 1985, Ser. No. 728,164
Int. Cl.[4] B04C *3/06*
U.S. Cl. 209—211 5 Claims



1. A centrifugal cleaner particularly adapted for the treatment of paper making stock containing light contaminant materials of similar and lower specific gravities to separate the

paper making fibers therein from said light contaminant materials comprising:

(a) a main tubular vessel enclosing a frustoconical interior space and having the apex end thereof open and of predetermined diameter which is substantially less than the maximum diameter of said space,

(b) means defining an inlet port to said space adjacent the other end of said vessel for delivering said paper making stock to said space,

(c) said inlet port means being constructed and arranged to deliver said stock to said space with a substantial circumferential flow component causing vortical separation of said stock into an outer flow fraction containing the large majority of said paper fibers and an inner flow fraction containing the large majority of said light contaminant materials,

(d) housing means secured to the apex end of said vessel and defining a chamber aligned and in open communication with said open apex end of said vessel,

(e) said housing means including means defining a discharge port from said chamber,

(f) an outlet tube of smaller outer diameter than said open apex end of said vessel,

(g) means supporting said outlet tube in said housing means for axial movement in substantially coaxial relation with said open apex end of said vessel,

(h) said tube being of sufficient length that with one end portion thereof inserted within said open apex end of said vessel, the opposite end portion thereof extends through said supporting means to space outside of said housing,

(i) means for securing said tube to said supporting means with said one end of said tube inserted within said open apex end of said vessel,

(j) said one end of said tube being of predetermined sufficiently smaller outer and inner diameter than the inner diameter of said open apex end of said vessel to define therewith, when inserted therein, an annular outlet port leading from said frustoconical space to said chamber which is of substantially greater flow area than the flow area through said tube to receive said fiber-containing outer flow fraction,

(k) whereby the flow through said tube is correspondingly less than the flow through said annular outer port and comprises said light contaminant-containing inner flow fraction, and

(l) means for effecting release of said securing means from said support means to provide for temporary axial retraction of said tube one end portion from said open apex end into said chamber to effect complete opening of said apex end of said vessel for discharge from said vessel into said chamber of contaminant material trapped in said annular outlet port without interrupting the operation of said cleaner.

4,564,444

FILAMENTOUS MICROORGANISM DETECTOR AND AN APPARATUS WITH THE DETECTOR FOR CONTROLLING THE PROCESS USING MICROORGANISMS

Masakatsu Hiraoka, Uji; Kazushi Tsumura, Nagaokakyo; Kenji Baba, Hitachi; Shunsuke Nogita, Hitachi, and Shunji Mori, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 26, 1984, Ser. No. 634,536

Claims priority, application Japan, Jul. 28, 1983, 58-140423

Int. Cl.[4] C02F *3/20*; C12M *1/36*

U.S. Cl. 210—96.1 **6 Claims**

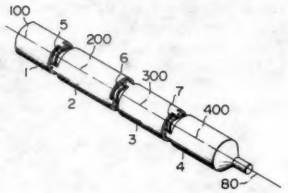
5. A system for controlling a sewage treatment apparatus including an aeration tank having inlets receiving a flow of external sewage and a flow of air for mixing and agitating the received sewage and air and producing activated sludge by growth of filamentous fungi in the sewage, a settling tank connected to said aeration tank for receiving from said aeration tank a mixture containing the activated sludge treated in said aeration tank and settling said activated sludge, and return pipe means connected between said aeration tank and said settling tank for returning part of the activated sludge settled in said settling tank to said aeration tank, said sewage being treated by utilizing the activity of the filamentous fungi in said activated sludge additionally containing sludge flocks; said system comprising:

means for determining the amount of filamentous fungi in said aeration tank from a specimen of a mixture containing the filamentous fungi and sludge flocks in said aeration tanks;

a sensor for detecting the dissolved oxygen concentration of the mixture in said aeration tank;

means for determining a target value of the dissolved oxygen concentration of the mixture from the amount of filamentous fungi determined; and

means for controlling the amount of air supplied to said



aeration tank on the basis of the error of the detection value of said dissolved oxygen concentration as compared with said target value wherein said means for determining the amount of filamentous fungi comprises means for forming an optical image of said specimen, scanning means for scanning said optical image two-dimensionally and producing a series of brightness signals indicating brightness levels of scanned points on said optical image, means for extracting from said brightness signals those brightness signals indicating a predetermined range of the brightness levels which are lower than a predetermined upper limit representing the background brightness of said optical image, but higher than a predetermined lower limit representing the brightness of the sludge flocks and means for counting the number of said extracted brightness signals thereby determining the amount of the filamentous fungi from said count.

4,564,445

SELF-CONTAINED SEWAGE WASTE DISPOSAL SYSTEM

Clifton F. Briner, Lafayette, Ind.; William R. Bocchini, Wyckoff, and Brian Wilcockson, Long Beach Island, both of N.J., assignors to American Standard Inc., New York, N.Y.

Division of Ser. No. 320,595, Nov. 12, 1981, Pat. No. 4,393,524.

This application Apr. 21, 1983, Ser. No. 487,004

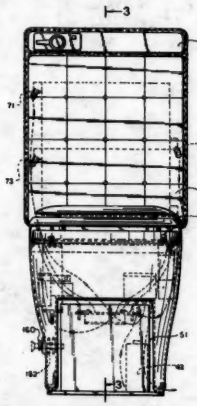
The portion of the term of this patent subsequent to Jan. 14, 2003, has been disclaimed.

Int. Cl.[4] C02F *9/00*

U.S. Cl. 210—167 **10 Claims**

1. A filter cassette adapted to be used as part of a self-contained sewage waste disposable system employing a toilet bowl for receiving human waste, recirculating fluid for facilitating the transportation of the human waste from the bowl to the filter cassette, pump means including interconnected conduits to transport the fluid between the bowl and the filter cassette and control means to circulate the fluid through the system to facilitate the collection and disposal of sewage waste within the system is a predetermined sequence, the filter cassette comprising; a casing having a hollow interior and an entrance opening adapted to be positioned for receiving contents flushed from the bowl and an exit opening for interconnection with conduits for removing stored filtered fluid from the cassette for recirculation, filter means in the cassette for separat-

ing the coarse and fine particles of solid waste material from the liquid received from the bowl, storage means in the cassette to store the solid material in a compact manner for subsequent disposal upon rmoval of the cassette, and means on the cassette



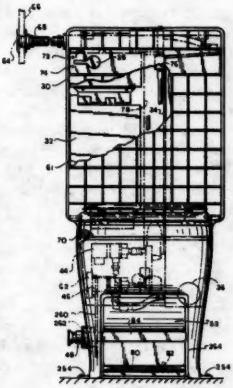
for removably interconnecting the control means therewith to facilitate passage of the fluid through the system and the collection and disposable sewage waste within the system in a predetermined sequence.

4,564,446

SELF-CONTAINED SEWAGE WASTE DISPOSAL SYSTEM

Kenneth J. De Graw, Montvale; William R. Bocchini, Wyckoff; Brian Wilcockson, Wayne; Armen Bogossian, Teaneck; Robert J. Uhl, Wayne; Earl E. Nause, Bellville, and Ernest R. Ramirez, Far Hills, all of N.J., assignors to American Standard Inc., New York, N.Y.

Division of Ser. No. 320,654, Nov. 12, 1981, Pat. No. 4,519,103.
This application Apr. 21, 1983, Ser. No. 487,257
The portion of the term of this patent subsequent to Jul. 19, 2000, has been disclaimed.
Int. Cl.[4] C02F *9/00*
U.S. Cl. 210—167 **5 Claims**



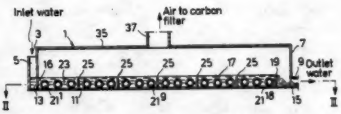
1. A filter cassette adapted to be used as part of a self-contained sewage waste disposal system employing a toilet bowl for receiving human waste, recirculating fluid for facilitating the transportation of human waste from the bowl to the filter cassette, pump means including interconnected conduits to transport the fluid between the bowl and the filter cassette and control means to circulate the fluid through the system to facilitate the collection and disposal of sewage waste within the system in a predetermined sequence, the filter cassette comprising; a casing having a hollow interior and an entrance opening adapted to be positioned for receiving contents flushed from the bowl and an exit opening for interconnection with conduits for removing filtered fluid from the cassette for recirculation, filter means in the cassette for separating the coarse and fine particles of solid waste material from the liquid received from the bowl, storage means in the cassette to store the solid material in a compact manner for subsequent disposal upon removal of the cassette, the cassette having a configuration facilitating the separation between the stored waste and the filtered fluid to prevent recontamination of the filtered fluid including separation means, said separation means including a table spaced from the bottom of the cassette and supported by the cassette wall and supporting ribs so as to form an enclosed chamber, an access opening in the table in position to permit filtered fluid to pass there through for collection in the chamber and the ribs and cassette walls entrapping the filtered fluid and preventing contact with the stored waste, means for facilitating the immediate evacuation of the filtered fluid from the chamber, and means on the cassette for removably interconnecting the control means therewith to facilitate passage of the filtered fluid from the cassette to a position for recirculation and to a reservoir for storage and later use within the system and the collection and disposal of sewage waste within the system in a pre-determined sequence.

4,564,447

PURIFICATION APPARATUS

Wolfgang Tiedemann, Sigtuna, Sweden, assignor to VICO Kemisk Tekniska Fabrik AB, Bandhagen, Sweden

PCT No. PCT/SE83/00222, § 371 Date Jan. 20, 1984, § 102(e) Date Jan. 20, 1984, PCT Pub. No. WO83/04185, PCT Pub. Date Dec. 8, 1983
PCT Filed Jun. 2, 1983, Ser. No. 577,620
Claims priority, application Sweden, Jun. 4, 1982, 8203481
Int. Cl.[4] C02F *1/20*; B01D *3/00*
U.S. Cl. 210—220 **5 Claims**



1. Apparatus for purifying liquid contaminated by a solvent of at least one of the chlorinated or fluorinated hydrocarbon types, comprising a vessel adapted to receive a contaminated liquid with an inlet for receiving said contaminated liquid at an inlet end and an outlet for discharging purified liquid at an outlet end positioned opposite the inlet end, the vessel being arranged so that the liquid flows generally horizontally therethrough, means provided in conjunction with the outlet for maintaining the liquid flow through the vessel at a predetermined level, at least over a working section of the vessel, means arranged in the working section for being covered by the liquid at a shallow depth and for being supplied with cleaning air so as to cause the air to flow upwardly in finely divided form through the liquid flow and remove contaminating solvent dissolved in said liquid, said means for being covered by the liquid and for being supplied with cleaning air including a plurality of transversely arranged localized air outlet elements with intermediate liquid compartments and a large number of air outlet orifices distributed over the working section and arranged at a distance of approximately 5 to 15 mm below the liquid level as determined by said means for maintaining the

liquid level when said vessel is in an operative state, the working section being divided into a plurality of sub-sections, each sub-section provided with a number of said plurality of air outlet elements and a barrier provided between contiguous sub-sections, said air outlet elements including a plurality of tubular portions operatively connected to a source of air, said portions extending transversely to the flow direction of the liquid over the working section, the air outlet elements having upwardly curved upper sides which meet and define an uppermost top section of the air outlet elements and air outlet orifices arranged on the upper sides with the uppermost top section between the orifices, the air outlet elements being separated so as to define free compartments formed therebetween for the liquid and being tightly connected to a bottom side of the vessel at bottom sides of the air outlet elements, and means for taking air away from the vessel, said air having passed through the liquid and the entrained solvent.

4,564,448

DEVICE FOR TREATING FLUIDS WITH MAGNETIC LINES OF FORCE

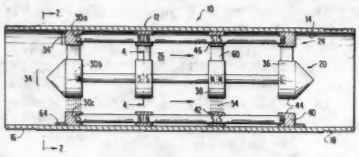
James R. O'Meara, Jr., P.O. Box 58170-MS-888, Houston, Tex. 77258

Continuation-in-part of Ser. No. 301,696, Sep. 14, 1981, Pat. No. 4,417,984, which is a continuation-in-part of Ser. No. 151,864, May 21, 1980, Pat. No. 4,289,621. This application Nov. 28, 1983, Ser. No. 555,799

The portion of the term of this patent subsequent to Sep. 15, 1998, has been disclaimed.

Int. Cl.⁴ B01D *35/06*; B03C *1/02*

U.S. Cl. 210—222 **19 Claims**



1. A device for the treatment of fluids with magnetic lines of force comprising:

at least one elongated core magnet assembly and at least one spaced-apart and longitudinally coextensive elongated ring magnet assembly, each said magnet assembly having a longitudinal axis substantially parallel with that of an adjacent magnet assembly to form at least one elongated passageway having fluid inlet and outlet ends for passage of said fluid therebetween;

each said magnet assembly comprising at least one tier of at least two coaxially aligned magnetic sections in each of at least one permanent magnet magnetized along its longitudinal axis with like polar ends of said magnetic sections adjacent each other, and with like polar ends of each said tier in each said magnet assembly being adjacent each other, thereby providing at least three spaced poles of alternating polarity in coaxial line in each said tier and in each said magnet assembly;

each said tier having one end supported by an inlet end support member and its other end supported by an outlet end support member;

said magnet assemblies being positioned so that the polarities of adjacent poles of magnetic sections in one said magnet assembly are unlike the polarities of the oppositely disposed adjacent poles of magnetic sections in a spaced-apart magnet assembly, thereby providing at least three concentrated flux lines of magnetic force and adjacent flux lines of reversed polarity in each said passageway.

4,564,449

DEVICE FOR SEPARATING TWO LIQUIDS OF DIFFERENT DENSITY

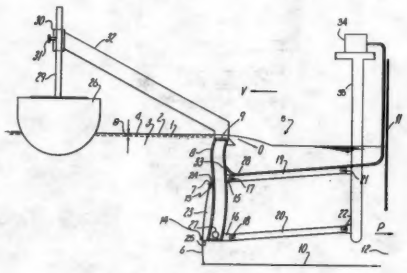
Gerrit Kampers, Puttershoek, Netherlands, assignor to Doseq Dutch Oil Spill Eq v.o.f., Netherlands

Filed Feb. 17, 1983, Ser. No. 467,329

Claims priority, application Netherlands, Feb. 19, 1982, 8200679

Int. Cl.⁴ E02B *15/04*

U.S. Cl. 210—242.3 **4 Claims**



1. A device for separating a first, lower density liquid from a second, higher density liquid, said liquids having a boundary layer between them, said device being horizontally movable relative to the liquids and comprising:

a support means (**26–32**) positionable with respect to the exposed, upper surface of the liquids;

a generally vertical, separating wall (**8**) immersible in said second liquid and mounted on said support means so that the position of said separating wall in said second liquid is adjustable in the vertical direction, said separating wall having a generally vertically surface along at least a portion of which the second liquid impinges during the relative movement of said device in the liquids, an upper portion of said surface of said separating wall presenting a horizontally convex configuration, the lower portion of said surface of said separating wall presenting a horizontally concave configuration, said wall having an upper overflow edge (**9**) positionable by the vertical movement of said separating wall proximate the boundary layer between the liquids and such that the first liquid flows over said overflow edge;

a vessel behind said overflow edge for receiving liquids passing over said edge;

a weir (**6**) mounted on said vessel and positioned in front of the lower portion of said separating wall in the direction of relative movement, said weir presenting a concave surface to the lower portion of said separating wall;

means (**13, 14**) intermediate said separating wall and weir for sealing said separating wall to said weir along two spaced parallel, horizontal planes while permitting vertical adjustment of said separating wall;

a fixed, base member with a pair of vertically spaced mounting means generally horizontally opposite said separating wall (**8**),

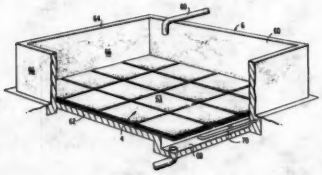
said separating wall having a second surface on the other side of said wall from said convex-concave surface with a pair of spaced lugs (**15, 16**) mounted on said second surface and vertically spaced by the same amount as said mounting means; and

a pair of generally parallel connecting rods (**19, 20**) having one end pivotally connected to said lugs and the other end pivotally connected to said mounting means of said base member.

4,564,450
RIGID FILTER ELEMENTS, RELATED APPARATUS AND METHODS

Louis H. Piper, Richmond, Va.; J. David White, Stone Mountain, Ga., and Ronald H. Hartman, Richmond, Va., assignors to Dehydro Corporation, Charlotte, N.C.

Filed Nov. 14, 1984, Ser. No. 671,428
Int. Cl.[4] B01D *39/20*
U.S. Cl. 210—293 11 Claims



4. A polyhydral module for use in forming a rigid filter bed by laying a plurality of the modules upon a planar support base comprising:

a bottom grid member and

a top rigid porous layer defined by an upper surface and a lower surface spaced apart from said upper surface,

said grid member comprising

a first series of spaced apart strip elements positioned in planes at an angle to said lower surface, said first series elements comprising an upper portion with a top edge and a lower portion with a bottom edge, said top edges of said first series elements lying substantially in a first single plane and said bottom edges of said first series elements lying substantially in a second single plane,

a second series of spaced apart strip elements positioned in planes at an angle to said lower surface and intersecting said first series elements at an angle, said second series elements comprising an upper portion with a top edge and a lower portion with a bottom edge,

said first and second series elements defining a multiplicity of polygonal channels depending from said lower surface,

the peripheral sides of said module being defined by peripheral strip elements different from said first and second series elements, said peripheral elements having lateral outward extending projections that form a peripheral ledge around said module,

said second series elements having lateral openings therein that extend upwardly into their lower portions from said bottom edges thereof, said lateral openings defining a plurality of transverse channels in said module,

said upper portions of at least one of said first and second series elements having integral anchor portions embedded at least in part in said top porous layer, said anchor portions serving as means to fix said top porous layer to said grid member.

11. Apparatus for the dewatering of water and wastewater sludge which comprises;

a tank having a substantially flat bottom, an open top, and vertical sides,

exit means through which filtrate may be removed from said tank,

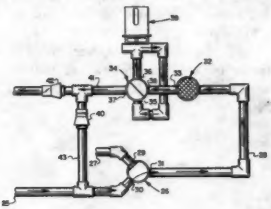
a plurality of the modules as defined in claim 4 positioned side by said within said tank with the bottom surfaces of said modules resting on said flat bottom of said tank, and

sealing material forming liquid-tight seals between adjacent edges of said modules.

4,564,451
APPARATUS FOR CLEANING A SWIMMING POOL STRAINER

Joseph D. Cohen, Frisco, Tex., assignor to Performance Pool Products, Ltd., Frisco, Tex.

Filed Mar. 21, 1983, Ser. No. 477,378
Int. Cl.[4] B01D *35/00, 35/02*
U.S. Cl. 210—411 12 Claims



1. An apparatus for circulating water in a swimming pool comprising:

a swimming pool intake;

a strainer means for retaining particles from a flow of water and including a strainer inlet and a strainer outlet;

a pump including a suction inlet and a discharge outlet;

a filter for removing sediment from water;

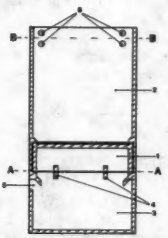
a swimming pool return connected to the filter; and

valve means for providing a first valve configuration having the strainer inlet connecting to the swimming pool intake, the strainer outlet connecting to the pump suction inlet and the pump discharge outlet connecting to the filter and for providing a second valve configuration having the pump suction inlet connecting to the swimming pool intake, the pump discharge outlet connecting to the strainer outlet and the strainer inlet connecting to a waste receptacle.

4,564,452
APPARATUS FOR FILTRATION

Anthony N. Sharpe, 230 Christian St., (P.O. Box 1224), Almonte, Canada K0A 1A0

Filed Oct. 5, 1984, Ser. No. 657,836
Claims priority, application Canada, Dec. 9, 1983, 443000
Int. Cl.[4] B01D *25/04*
U.S. Cl. 210—497.2 10 Claims



1. A complete filtration apparatus comprising filter means and flexible impermeable film welded or adhesively joined together in such a way that receptacles for the whole volumes of both the fluid to be filtered and the filtered fluid are formed from said film, said receptacles being internally connected with one another solely by said filter means, said receptacles also being initially flat and of minimum internal volume before use but being capable of flexibly dilating or collapsing to accommodate the addition of fluid and its movement through the

apparatus under the influence of gravity and also of holding the filtered fluid until such time as it is removed for further use.

4,564,453

METHOD AND APPARATUS FOR THE DETECTION OF TOXIC SUBSTANCES IN WASTE WATER FEEDING A BIOLOGICAL TREATMENT PLANT

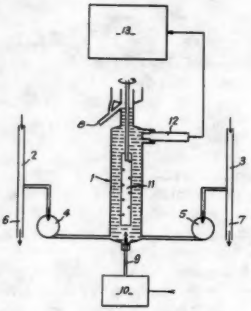
Daniel Coplot, Franconville, and Georges Picon, Gennevilliers, both of France, assignors to Atochem (Societe Anonyme Styled), France

Filed Jan. 20, 1984, Ser. No. 572,465

Claims priority, application France, Jan. 24, 1983, 83 01027

Int. Cl.[4] C02F *3/12*; C12M *1/36*; G01N *33/18*

U.S. Cl. 210—614 **8 Claims**



1. A method for detecting toxic substances in the waste water supplied to a biological treatment plant wherein the waste water is brought in contact with activated sludge samples taken from the biological treatment plant inside a reactor, comprising the steps of:

continuously supplying the reactor with activated sludge samples from the plant;

supplying the reactor with waste water to be analyzed;

continuously supplying the reactor with oxygen;

measuring the quantity of oxygen dissolved in the reactor;

comparing the measured quantity of oxygen dissolved in the reactor to selected maximum and minimum values;

regulating the flow of waste water supplied to the reactor by respectively reducing and increasing the waste water flow when the measured dissolved oxygen content value is respectively below the selected minimum value and above the selected maximum value in order to maintain the load applied to the reactor substantially constant; and

activating a toxicity alarm when the measured content exceeds said maximum value and when the waste water supply to the reactor reaches a selected water flow rate maximum.

4,564,454

SELF-CONTAINED SEWAGE WASTE DISPOSAL SYSTEM

Clifton F. Briner, Lafayette, Ind.; William R. Bocchini, Wyckoff, and Brian Wilcockson, Long Beach Island, both of N.J., assignors to American Standard Inc., New York, N.Y.

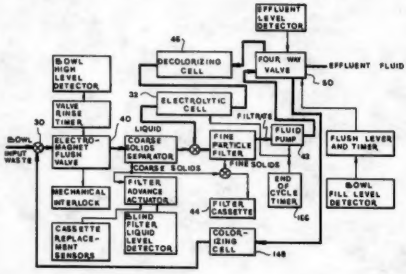
Division of Ser. No. 320,595, Nov. 12, 1983, Pat. No. 4,393,524. This application Apr. 21, 1983, Ser. No. 487,078

The portion of the term of this patent subsequent to Jan. 14, 2003, has been disclaimed.

Int. Cl.[4] C02F *9/00*

U.S. Cl. 210—668 **27 Claims**

1. A method of disposing of sewage waste within a self-contained system comprising; providing a toilet bowl adapted to receive human waste and a predetermined amount of internally housed fluid in the system for diluting the waste, transporting the waste and rinsing the bowl, placing a removable filter cassette in alignment and in communication with the toilet bowl, flushing the bowl and dumping the contents into the filter cassette, filtering the fluid and separating coarse and fine particles of solid material from the fluid received from the bowl, storing the solid material in a compact manner in the cassette for subsequent disposal upon removal of the cassette from alignment with the toilet bowl, transporting fluid from



the interior of the system through interconnected conduits to fill the bowl after a flush and to transport filtered fluid from the filter cassette to a position for recirculation, and removing and controlling by control means the passage of the internally housed fluid in a predetermined sequence to facilitate the collection and disposal of sewage waste without the need for introduction of external fluid to the system other than that received from human waste.

4,564,455

THREE COMPONENT RESIN SYSTEM AND METHOD FOR PURIFYING AQUEOUS SOLUTIONS

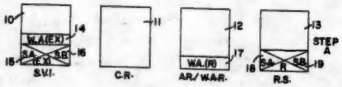
George C. Flynn, Chester; Eli Salem, Deal, both of N.J., and Robert Kunin, Yardley, Pa., assignors to The Graver Company, Union, N.J.

Filed Dec. 13, 1983, Ser. No. 560,806

The portion of the term of this patent subsequent to Oct. 15, 2002, has been disclaimed.

Int. Cl.[4] C02F *1/42*

U.S. Cl. 210—675 **18 Claims**



1. A method for removing impurities including ammonia and sodium ions from a liquid comprising the steps of:

(a) preparing a bed of filter materials including a first layer of a weakly acidic cation exchange resin and a second layer of a mixture comprising a strongly acidic cation exchange resin and an anion exchange resin, said weakly acidic cation exchange resin having a pK_a in the range of about 3.5 to 5.8 and

(b) passing the liquid through said first layer and then said second layer of said bed at a temperature less than 200° F. and at a flow rate of less than about 75 gallons per minute per square foot to substantially remove the impurities and purify the liquid.

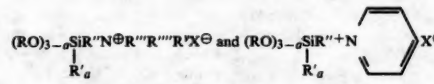
4,564,456

METHOD OF TREATING WATER TO INHIBIT CORROSION AND DIMINISH MINERAL DEPOSITION

Gary R. Homan, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jun. 1, 1984, Ser. No. 616,088
Int. Cl.[4] C02F 5/12
U.S. Cl. 210—698 32 Claims

1. A method of treating water in order to inhibit corrosion and diminish mineral deposition in a neutral or basic pH, the method comprising adding to the water, in an amount sufficient to inhibit corrosion and diminish mineral deposition, an organosilane having a general formula selected from the group consisting of



wherein, in each formula,

R is an alkyl radical of 1 to 4 carbon atoms or hydrogen;

a has a value of 0, 1 or 2;

R′ is an alkyl radical of 1 to 4 carbon atoms;

R″ is an alkylene group of 1 to 4 carbon atoms;

R‴,R⁗ and Rᵛ are each independently selected from a group consisting of alkyl radicals of 1 to 18 carbon atoms, $-CH_2C_6H_5$, $-CH_2CH_2OH$, $-CH_2OH$, and $-(CH_2)_xNHC(O)R^{vi}$, wherein x has a value of from 2 to 10 and R^{vi} is a perfluoroalkyl radical having from 1 to 12 carbon atoms;

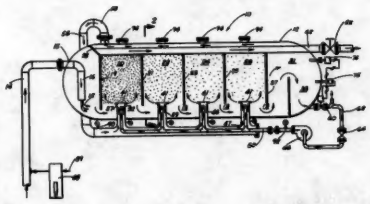
X is chloride, bromide, fluoride, iodide, acetate or tosylate.

4,564,457

UPFLOW GAS EDUCTOR INDUCED AIR FLOATATION SEPARATOR

John A. Cairo, Jr., Baton Rouge, La., and Christopher A. Jahn, Mission Viejo, Calif., assignors to L'eau Claire Systems, Inc., Kenner, La.

Filed Nov. 3, 1983, Ser. No. 548,282
Int. Cl.[4] C02F 1/24
U.S. Cl. 210—704 5 Claims



1. An upflow separator apparatus for treating a contaminated liquid stream comprising:

a. a substantially cylindrical, gas tight fluid flow chamber, defining a lower liquid flow portion and an upper gas collection portion;

b. means for introducing a first flow of contaminated liquid into said liquid portion of said chamber;

c. an outlet line for flowing clarified liquid from said chamber;

d. baffle means dividing said chamber into a plurality of aeration chambers, said chambers in fluid flow communication with one another;

e. means for eductıng gas through said contaminated liquid in each of said aeration chambers, comprising:

i. a clarified liquid inlet line;

ii. a gas inlet line, said gas being educted into said eductor means by the flow of clarified liquid in said liquid line;

iii. header means, further comprising first and second spaced apart plate members emitting a mixture of said educted gas and liquid therebetween for achieving maximum upward dispersion of gas bubbles through the contaminated liquid in each of said aeration chambers; and

iv. said means for eductıng gas protruding from the floor portion of each of said aeration chambers;

f. a single channel extending substantially the length of said gas collection portion transverse said baffle means for receiving and collecting contaminants removed from said liquid portion into said gas collection portion;

g. means for recirculating said gas collected within said upper gas collection portion by normal eduction, comprising a gas flow line in fluid communication with said upper gas collection portion and said means for eductıng gas into said liquid flow;

h. means in fluid communication with said channel for siphoning said contaminants from said channel as a result of a predetermined signal; and

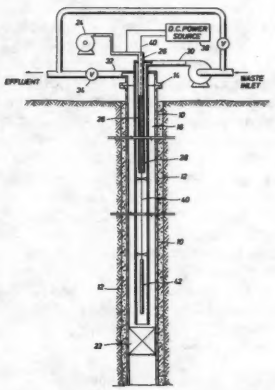
i. means for recirculating a portion of clarified liquid from said outlet line back into said chamber through said eductıng means.

4,564,458

METHOD AND APPARATUS FOR DISPOSAL OF A BROAD SPECTRUM OF WASTE FEATURING OXIDATION OF WASTE

James C. Burleson, 374 Dawn Hill, Friendswood, Tex. 77546

Continuation of Ser. No. 550,357, Nov. 10, 1983, abandoned.
This application Sep. 12, 1984, Ser. No. 649,907
Int. Cl.[4] C02F 1/74, 11/08
U.S. Cl. 210—747 13 Claims



1. A method of wet oxidation of organic waste materials in waste water comprising the steps of:

(a) flowing a stream of waste water including organic waste materials into an insulated well;

(b) compressing a flow of oxygen to be injected into the flowing stream of waste water;

(c) extending the flow of waste water to a depth such that pressure in the insulated well is increased to the pressure required for supercritical water;

(d) initially heating with a separate control means the waste water at the bottom of the insulated well by flowing an electric current through the water at the bottom of the insulated well to generate resistance heat for the water to initiate oxidation for sustaining supercritical conditions in the insulated well;

(e) oxidizing the organic waste materials in the waste water

to liberate heat in the insulated well to sustain the temperature required for supercritical water wherein the initial heating step with the control means is ended after the oxidized wastes sustain exothermic oxidation; and

(f) over a period of time, injecting the flow of oxygen into the insulated well with the waste water, and also removing water from the insulated well to enable continuous oxidation of waste in the insulated well at supercritical conditions to sustain supercritical temperatures.

4,564,459

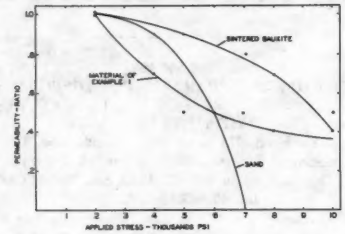
PROPPANT CHARGE AND METHOD

David R. Underdown, Alvin, and O. Howard Glaze, Kingwood, both of Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Division of Ser. No. 494,548, May 13, 1983, Pat. No. 4,443,347, which is a continuation-in-part of Ser. No. 327,002, Dec. 3, 1981, abandoned. This application Apr. 13, 1984, Ser. No. 599,924

Int. Cl.[4] C09K *3/00*; E21B *43/267*

U.S. Cl. 252—8.55 R **2 Claims**



1. A pre-cured proppant charge for propping a fracture in a subterranean well, said pre-cured proppant charge being pre-cured prior to injection into the subterranean well, said pre-cured proppant charge comprising, prior to injection of the pre-cured proppant into said well, resin coated sand particles most of which are composed of a single substrate particle with a thermoset resite coating thereon, the resite coating being one of which, when it is the resin coating on sand particles of a proppant charge, produces a charge wherein at least one of: (a) the Conductivity Ratio thereof, throughout a given closure stress range, is greater than that of a charge of the uncoated sand particles having substantially the same particle size distribution; or (b) the Permeability Ratio thereof throughout the stress range of about 2,000 to 10,000 p.s.i. is at least about 30 percent that of a sintered bauxite charge of substantially the same particle size, the resin for said coating being at least one of: (1) a resole; or (2) a novolac.

4,564,460

HYDROCARBYL-SUBSTITUTED CARBOXYLIC ACYLATING AGENT DERIVATIVE CONTAINING COMBINATIONS, AND FUELS CONTAINING SAME

Casper J. Dorer, Jr., 4852 Fairlawn Rd., Lyndhurst, Ohio 44124, and Katsumi Hayashi, 8290 Mentorwood Dr., Mentor, Ohio 44060

Filed Aug. 9, 1982, Ser. No. 404,845

Int. Cl.[4] F16K *31/44*

U.S. Cl. 252—73 **111 Claims**

1. A composition comprising a mixture of two individual components, said components being:

(A) as a first component, a pour point depressant selected from the group consisting of

(i) an oil-soluble ethylene backbone polymer having a number average molecular weight in the range of about 500 to about 50,000;

(ii) a hydrocarbyl-substituted phenol of the formula

$(R^*)_a—Ar—(OH)_b$ I

wherein R* is a hydrocarbyl group selected from the group consisting of hydrocarbyl groups of from about 8 to about 30 carbon atoms and polymers of at least 30 carbon atoms, Ar is an aromatic moiety having 0 to 4 optional substituents selected from the group consisting of lower alkyl, lower alkoxyl, nitro, halo or combinations of two or more of said optional substituents, and a and b are each independently an integer of 1 up to 5 times the number of aromatic nuclei present in Ar with the proviso that the sum of a and b does not exceed the unsatisfied valences of Ar; or

(iii) mixtures of (i) and (ii); and

(B) as a second component, an agent for dispersing and/or suspending wax crystals, said second component being the oil-soluble reaction product of (B)(I) a hydrocarbyl-substituted carboxylic acylating agent with (B)(II) one or more amines, one or more alcohols, or a mixture of one or more amines and/or one or more alcohols, the hydrocarbyl substituent of said agent (B)(I) being selected from the group consisting of

(i') one or more mono-olefins of from about 8 to about 30 carbon atoms;

(ii') mixtures of one or more mono-olefins of from about 8 to about 30 carbon atoms with one or more olefin polymers of at least 30 carbon atoms selected from the group consisting of polymers of mono-1-olefins of from 2 to 8 carbon atoms, or the chlorinated or brominated analogs of such polymers; and

(iii') one or more olefin polymers of at least 30 carbon atoms selected from the group consisting of

(a) polymers of mono-olefins of from about 8 to about 30 carbon atoms;

(b) interpolymers of mono-1-olefins of from 2 to 8 carbon atoms with mono-olefins of from about 8 to about 30 carbon atoms;

(c) one or more mixtures of homopolymers and/or interpolymers of mono-1-olefins of from 2 to 8 carbon atoms with homopolymers and/or interpolymers of monoolefins of from about 8 to about 30 carbon atoms; and

(d) chlorinated or brominated analogs of (a), (b), or (c).

4,564,461

METHOD FOR THE MECHANICAL WORKING OF CAST IRON AND AN AQUEOUS CONCENTRATE TO BE USED IN THE METHOD

Rolf O. Sköld, Stenungsund; Lars-Gösta von Dahn, Hjälteby, and Anna K. Sterky, Stenungsund, all of Sweden, assignors to Berol Kemi AB, Stenungsund, Sweden

Filed Jan. 30, 1984, Ser. No. 575,220

Claims priority, application Sweden, Feb. 10, 1983, 8300704

Int. Cl.[4] C10M *3/38*

U.S. Cl. 252—32.5 **22 Claims**

1. In a method for the mechanical working of cast iron comprising mechanically working the cast iron in the presence of an alkaline aqueous metalworking composition, the improvement wherein said metalworking composition is essentially free of mineral oil and comprises:

an organic copper (II) complex in an amount of 0.05–2% by weight of the composition; and

an iron corrosion inhibitor in an amount of 0.1–5% by weight.

4,564,462

MENTHOL SOAP

Hajime Watanabe, Machida; Yoshio Tanaka, Tokyo, and Seiichi Abe, Yokohama, all of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo and Sunstar K.K., Takatsuki, both of, Japan

Filed Jun. 8, 1984, Ser. No. 618,462
Claims priority, application Japan, Jun. 23, 1983, 58-111905
Int. Cl.[4] C11D *17/00*
U.S. Cl. 252—134 11 Claims

1. A menthol soap in bar form comprising a soap base, 2 to 7% by weight of menthol based on the weight of the soap base, 2 to 7% of a crack-preventing agent, and a solvent for said menthol in an amount of from ½ to 3/2 that of the menthol;

said crack-preventing agent being a higher alcohol/ethylene oxide adduct containing 10 to 50 moles of ethylene oxide per mole of alcohol and said higher alcohol being an alkyl or alkenyl C_{12} to C_{18} alcohol; and

said solvent for said menthol being an alkylene diol having from 2 to 6 carbon atoms.

4,564,463

LIQUID LAUNDRY DETERGENTS WITH IMPROVED SOIL RELEASE PROPERTIES

Isaac I. Secemski, Flushing, N.Y.; Lynn H. Lander, Harrington Park, and Henricus M. Princen, Bedminster, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Jun. 15, 1984, Ser. No. 621,289
Int. Cl.[4] C11D *17/00*
U.S. Cl. 252—174.17 10 Claims

1. A heavy duty liquid detergent composition with improved soil release properties comprising:

(a) from about 2 to 10% of a nonionic surfactant selected from the group consisting of a C_{12}–C_{13} fatty alcohol ethoxylated with an average of 6.5 moles ethylene oxide, a C_9–C_{11} fatty alcohol ethoxylated with an average of 6 moles ethylene oxide, and mixtures thereof;

(b) from about 10 to 25% of an anionic surfactant; and

(c) from about 0.1 to 0.8% of methylcellulose.

9. A method for imparting soil release benefits to a fabric comprising washing the fabric with a liquid detergent composition comprising:

(a) from about 2 to 10% of a nonionic surfactant selected from the group consisting of a C_{12}–C_{13} fatty alcohol ethoxylated with an average of 6.5 moles ethylene oxide, a C_9–C_{11} fatty alcohol ethoxylated with an average of 6 moles ethylene oxide, and mixtures thereof;

(b) from about 10 to 25% of an anionic surfactant; and

(c) from about 0.1 to 0.8% of methylcellulose.

4,564,464

HECTORITE BASED PAINT SPRAY BOOTH DETACKIFYING SLURRIES AND METHODS OF USE THEREOF

William L. Harpel, Langhorne; Deborah L. Purnell, Folsom, and Richard J. Pilny, Warrington, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Dec. 27, 1984, Ser. No. 686,951
Int. Cl.[4] C02F *1/56*
U.S. Cl. 252—181 3 Claims

1. A pumpable slurry for the detackification and clarification of paint spray booth wastes comprising, in combination, from about 99.9%–10% of a hectorite clay material, from about 0.1–20% of a thinning agent, wherein said thinning agent comprises a member or members selected from the group consisting of water soluble aliphatic and alicyclic amines, about 0–10% of a water soluble polyphosphate water conditioning agent, from about 0 –15% alumina, from 0– about 40% montmorillonite clay, and about 0–5% of an antifoam, and water, all of said percentages being based upon the total weight of the non-aqueous components of said slurry.

4,564,465

CORROSION INHIBITION ADDITIVE FOR FLUID CONDITIONING

John W. Bibber, Norman, Okla., assignor to Air Refiner, Inc., Oklahoma City, Okla.

Filed Apr. 20, 1983, Ser. No. 486,669
Int. Cl.[4] C23F *11/00*
U.S. Cl. 252—389 R 23 Claims

1. A corrosion inhibitor for addition to the cooling fluid in a fluid circulating cooling system, comprising:

an additive of a soluble alkali metal salt of perchlorate in solution with said fluid in a concentration in the range of 100 to 1000 ppm and forming ions of perchlorate.

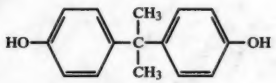
4,564,466

METHOD FOR THE MANUFACTURE OF A POLYMER

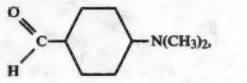
Gerd Weddigen; Robert Huber, both of Heidelberg; Birgit Schmidt, Ludwigshafen, and Hartmut Schneider, Plankstadt, all of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim-Käfertal, Fed. Rep. of Germany

Filed Dec. 21, 1983, Ser. No. 563,871
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1982, 3248088
Int. Cl.[4] C08G *8/28, 14/12*
U.S. Cl. 525—505 1 Claim

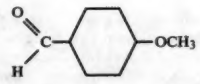
1. Method for the production of a synthetic polymer with triaromatic methane units as basic building blocks having an electric conductivity through formation of charge transfer complexes, said polymer selected from the group consisting of a polymer formed by polycondensation of bisphenol-A,



and 4-dimethylaminobenzaldehyde



by polycondensation of bisphenol-A and para-anisaldehyde



and by polycondensation of benzaldehyde and resorcinol, which comprises, adding 20% by weight sulfur trioxide relative to the total weight of the polymer as an electron acceptor and reacting the sulfur trioxide with the polymer to form charge transfer complexes and produce a fusible and soluble polymer with an electric bulk conductivity of 2×10^{-5} $(ohm\times cm)^{-1}$.

4,564,467

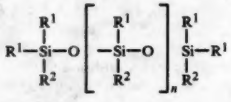
OIL COMPOSITION

Alain J. Rauline, Pavilly, France, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 28, 1983, Ser. No. 566,203
Claims priority, application United Kingdom, Dec. 31, 1982, 8237073
Int. Cl.[4] H01B *3/22, 3/46*
U.S. Cl. 252—573 11 Claims

1. An electrical oil composition having suitable dielectric properties comprising a major proportion by weight of an oil

having a kinematic viscosity of 5 to 30 cSt at 40° C. and a pour point depressing amount in the range of 0.01 to 10.0 weight percent of an organo siloxane having the formula:



wherein

R^1 is independently methyl, ethyl or propyl,

R^2 is independently a C_{10} to C_{20} alkyl group and

n is 12 to 28.

4,564,468

FLAME RETARDANT FOR POLYURETHANES

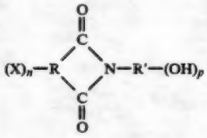
Henry J. Barda, North Brunswick, N.J., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 303,055, Sep. 17, 1981, abandoned. This application Dec. 12, 1984, Ser. No. 680,930

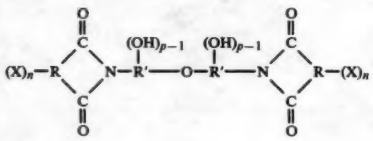
Int. Cl.⁴ C09K *2/10*

U.S. Cl. 252—609 **10 Claims**

1. A reactive flame retardant mixture comprising about 1–99 weight percent of a halogenated imide-containing polyol having the formula:



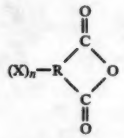
and about 99–1 weight percent of the corresponding ether having the formula:



wherein R is a hydrocarbon group having the valence n+2 and is selected from the group consisting of benzene groups, naphthalene groups and alicyclic hydrocarbon groups containing 5 to 10 carbon atoms, R′ is an aliphatic hydrocarbon group containing 3–12 carbon atoms, X is selected from the group consisting of bromine and chlorine, n is an integer from 1–6 and p is an integer from 2–6.

7. A process for preparing a reactive flame retardant mixture, said process comprising reacting at a temperature of about 50°–350° C.

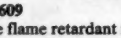
(a) about one mole of a halogenated dicarboxylic anhydride compound having the structure:



wherein R is a hydrocarbon group having the valence n+2 and is selected from the group consisting of benzene groups, naphthalene groups and alicyclic hydrocarbon groups containing 5 to 10 carbon atoms, X is selected from the group consisting of bromine and chlorine and n is an integer from 1 to 6,

(b) about 0.8–50 moles of an alcohol containing 1–10 carbon atoms and

(c) about 0.5–2.5 moles of an aminopolyol having the structure:



wherein R′ is an aliphatic hydrocarbon group containing 2–6 carbon atoms having the valence p+1 and p is an integer from 2–6.

4,564,469

PROCESS FOR STORING FLEXIBLE CONTAMINATED MATERIALS

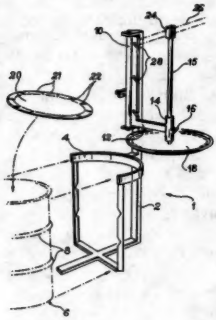
André Cochet, Saint Cyr l'Ecole; Roger Droussent, Saint Remy les Chevreuse, and Marcel Jurado, Argenteuil, all of France, assignors to Commissariat a l'Energie, Paris, France

Filed Sep. 28, 1983, Ser. No. 536,505

Claims priority, application France, Sep. 28, 1982, 82 16285

Int. Cl.⁴ B30B *15/00*; C09K *11/04*

U.S. Cl. 252—626 **4 Claims**



1. A process for storing by compacting waste comprising contaminated flexible materials in a drum comprising the steps:

(a) placing the waste in a drum,

(b) placing above the waste in said drum a precover having a diameter slightly greater than the internal diameter of the drum, said precover having an outer edge which is deformable,

(c) inserting the precover into the drum to compact the waste therein, said insertion resulting in a deformation of the edges of said precover and withdrawal of the precover from said drum being prevented after compaction by friction between said deformed edge of the precover and the drum walls,

(d) and repeating steps (a), (b), and (3) until said drum is filled.

4,564,470

FOLDER ASSEMBLY

Günter K. Schmitt, Würzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Würzburg, Fed. Rep. of Germany

Filed May 28, 1985, Ser. No. 738,318

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1984, 3422755

Int. Cl.⁴ B41F *13/56*

U.S. Cl. 270—21.1 **7 Claims**

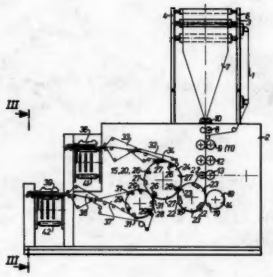
1. A folder assembly for book folding a web printed in a

web-fed rotary printing machine, said folder assembly comprising:

means for directing said printed web to a rotatable cutting cylinder, said cutting cylinder severing said web into signatures and cooperating with a rotatable folding blade cylinder which cross folds said signatures;

a rotatable folding jaw cylinder having folding jaws which receive said cross folded signatures from said folding blade cylinder;

a rotatable gripper cylinder having gripper rows and cooperable with said folding jaw cylinder to receive selected ones of said cross folded signatures;



an upper third fold assembly and a lower third fold assembly, said upper third fold assembly being stationary and said lower third fold assembly being displaceable in a horizontal plane generally parallel to an axis of rotation of said folding jaw cylinder, each of said upper and lower third fold assemblies being operable to form a longitudinal fold in said cross folded signatures; and

an upper transport tape assembly extending between said folding jaw cylinder and said upper third fold assembly and a lower transport tape assembly extending between said gripper cylinder and said lower third fold assembly.

4,564,471

METHOD FOR REDUCTIVE ELIMINATION OF PROTECTING GROUPS

Katsumi Sugiyama; Hideo Takeda, both of Kawasaki; Hiroko Sato, Yokohama; Yuji Nonaka, Shinnanyo; Kiyotaka Oyama, Shinnanyo, and Masashige Kubo, Shinnanyo, all of Japan, assignors to Ajinomoto Co., Inc.; Toyo Soda Mfg. Co., Ltd. and Sagami Chem. Rsch. Cntr., all of, Japan

Filed Sep. 17, 1980, Ser. No. 188,107

Claims priority, application Japan, Sep. 27, 1979, 54-123178

Int. Cl.[4] C07C *103/52*

U.S. Cl. 260—112.5 K **3 Claims**

1. In a method for eliminating a benzyloxycarbonyl group from a lower alkyl ester of N-benzyloxycarbonyl-α-L-aspartyl-L-phenylalanine by catalytic reduction with hydrogen in a liquid reaction medium, an improvement which comprises using a two-phase medium composed of water and toluene as the liquid reaction medium.

4,564,472

3-AMINOMETHYLENE-2,4-PENTANEDIONE BIS(THIOSEMICARBAZONE) DERIVATIVES, AND THEIR PRODUCTION AND USE

Nobuo Ueda, Kawanishi; Susumu Kondo, and Masaaki Hazue, both of Hyogo, all of Japan, assignors to Nihon Medi-Physics Co., Ltd., Hyogo, Japan

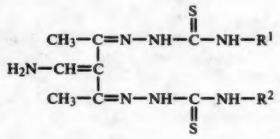
Division of Ser. No. 332,152, Dec. 18, 1981. This application Jun. 30, 1983, Ser. No. 509,669

Claims priority, application Japan, Dec. 19, 1980, 55-180770; Dec. 19, 1980, 55-180771

Int. Cl.[4] C07G *7/04, 7/00*

U.S. Cl. 260—113 **19 Claims**

1. A physiologically active substance-combined compound comprising a compound of the formula:



(I)

wherein R^1 and R^2 are each hydrogen, C_1-C_3 alkyl or phenyl, and a physiologically active substance bound therewith by a chemical bond.

4,564,473

6-UNSUBSTITUTED-7-OXO-4-OXA-DIAZABICYCLO(3.2.0)HEPT-2-ENE DERIVATIVES

Dieter Häbich, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

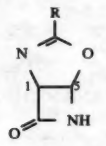
Filed Aug. 4, 1983, Ser. No. 520,097

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1982, 3231060

Int. Cl.[4] C07D *498/04*

U.S. Cl. 260—245.4 **3 Claims**

1. A compound of the formula



in which

R is phenyl, phenyl substituted by methyl, ethyl, aminomethyl, hydroxyl, methoxy, ethoxy, carbamoyloxy, acetoxy, amino, mesylamino, methylamino, aminosulphonylamino, amidino, mesyl, methylsulphinyl, methoxycarbonyl, carbamoyl, sulpho, methylthio, silyl, silyloxy or halogen.

4,564,474

23,23-DIFLUORO-25-HYDROXY-VITAMIN D_3 AND PROCESS FOR PREPARING SAME

Hector F. DeLuca; Yoko Tanaka, both of Madison, Wis.; Nobuo Ikekawa, and Yoshiro Kobayashi, both of Tokyo, Japan, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

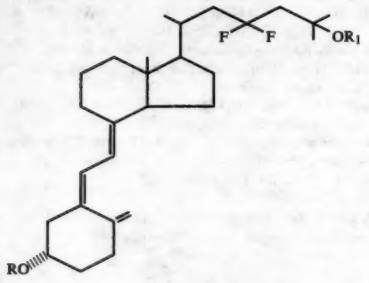
Continuation-in-part of Ser. No. 524,269, Aug. 18, 1983. This application Aug. 13, 1984, Ser. No. 639,776

The portion of the term of this patent subsequent to Feb. 19, 2002, has been disclaimed.

Int. Cl.[4] C07J *9/00*

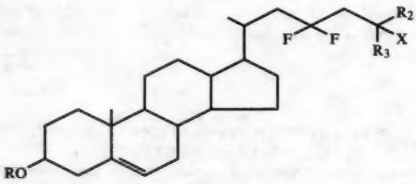
U.S. Cl. 260—397.2 **3 Claims**

1. Compounds having the formula



wherein R and R_1 are each selected from the group consisting of hydrogen, an acyl group having from one to about four carbon atoms and benzoyl, with the proviso that R and R_1 cannot both be hydrogen.

3. A compound having the formula



where R_1 is acetyl
X is hydroxy and
R_2 and R_3 are methyl.

4,564,475

COMPOSITIONS CONTAINING UNSATURATED FATTY ACID COMPOUNDS AND METHOD OF STABILIZING UNSATURATED FATTY ACID COMPOUNDS

Masui Masaichiro, Takarazuka, Japan, assignor to Hiroshi Sekimoto, Ishikawa; Michio Nakanishi, Osaka and Masataka Akiyoshi, Hyogo, all of, Japan

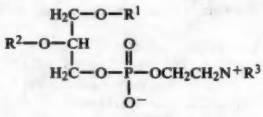
Filed May 29, 1984, Ser. No. 615,095

Claims priority, application Japan, May 28, 1983, 58-94489; Jul. 2, 1983, 58-120693

Int. Cl.[4] A23J *7/00*

U.S. Cl. 260—398.5 **7 Claims**

1. A stable composition containing at least one fatty acid compound selected from the group consisting of an unsaturated fatty acid having 20 to 22 carbon atoms and 3 or more double bonds, an amide thereof and an ester thereof, and as a stabilizing agent for the fatty acid compound, at least one compound of the formula:



(I)

wherein R^1 and R^2 respectively stand for a fatty acid residue, and R^3 stands for $(H)_3$ or $(CH_3)_3$.

4,564,476

ARYL FATTY ACID LEUKOTRIENE SYNTHESIS INHIBITORS

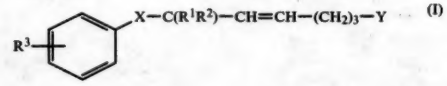
Chih Y. Ho, Lansdale, Pa., assignor to McNeilab, Inc., Fort Washington, D.C.

Filed Oct. 29, 1984, Ser. No. 665,683

Int. Cl.[4] C07C *57/42, 69/108, 103/76, 33/30*

U.S. Cl. 260—404 **11 Claims**

1. An aryl fatty acid compound of the following formula (I):



(I)

wherein

R^1 and R^2 are independently hydrogen, methyl or fluorine or taken together are ethylene of the formula $—CH_2C-H_2—$;

R^3 is hydrogen, alkyl, alkoxy, alkylthio, halo, alkenyl or hydroxy;

X is $—CH_2OCH_2—$, —CH=CH—, or $—CH=CH—CH-_2—O—CH_2—$;

Y is COOH, alkoxycarbonyl, $—CONH_2$, $—CONHR^4$, $—CONR^5R^6$, or hydroxyalkyl;

R^4 is alkyl or hydroxy;

R^5 is alkyl;

R^6 is alkyl; and,

when Y is $—CO_2H$, the pharmaceutically acceptable base addition salts thereof.

4,564,477

POLYPRENYL COMPOUNDS AND METHOD OF PRODUCING THE SAME

Tetsuo Takigawa; Koichi Ibata; Masafumi Okada; Masao Mizuno, and Takashi Nishida, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

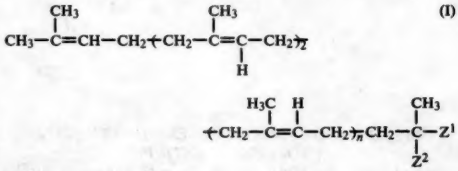
Filed Feb. 17, 1983, Ser. No. 467,253

Claims priority, application Japan, Feb. 19, 1982, 57-26300; Mar. 18, 1982, 57-44256; Mar. 19, 1982, 57-44839; Mar. 24, 1982, 57-47658; Mar. 29, 1982, 57-51903; Mar. 29, 1982, 57-51904; Apr. 6, 1982, 57-57863; May 14, 1982, 57-82040; May 24, 1982, 57-88320; Jun. 2, 1982, 57-95119

Int. Cl.[4] C07C *49/203;* C09F *5/00*

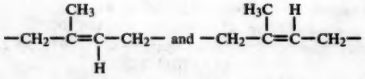
U.S. Cl. 260—405.5 **10 Claims**

1. A polyprenyl compound represented by the fomrula



(I)

wherein



represent a trans-isoprene unit and a cis-isoprene unit, respectively, n is an integer of 11 to 19, and Z^1 and Z^2 combinedly represent =O, =CH—COOH, =CH—$COOR^1$, =CH—CN, $=C(CN)COOR^2$, =CH—CO—NH_2, =CH—CO—$N(R^3)(R^4)$, =CH—CO—NHR^5, =CH—$CH-_2—N(R^3)(R^4)$, =CH—$CH_2—NHR^5$ or =CH—CHO or Z^1 is a

hydrogen atom and Z^2 is $-CH_2COOH$, $-CH_2COOR^6$, $-CH(CN)COOR^2$, $-CH_2CN$, $-CH_2-CO-NH_2$, $-CH=CH-N(R^3)(R^4)$ or $-CH_2-CH=N-R^5$, R^1, R^2 and R^6 each being a lower alkyl group, R^3 and R^4 each being independently a lower-alkyl, cycloalkyl, aryl or aralkyl group or R^3 and R^4 combinedly representing an alkylene group containing 2 to 5 carbon atoms, and R^5 being a lower-alkyl, cycloalkyl, aryl or aralkyl group.

4,564,478

FLUORINATED THIOCARBONIC ACID ESTER-FLUORIDES

Erich Klauke, Odenthal, and Engelbert Kühle, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

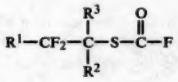
Filed Nov. 13, 1984, Ser. No. 670,693

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1983, 3341516

Int. Cl.⁴ C07C 153/017, 153/023, 148/00

U.S. Cl. 260—455 R 12 Claims

1. A fluorinated thiocarbonic acid ester-fluoride of the formula



(I)

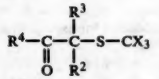
in which

R^1 represents straight-chain or branched alkyl with 1 to 12 carbon atoms, cycloalkyl with 3 to 8 carbon atoms, or phenyl or phenyl substituted with substituents selected from the group consisting of halogen, alkyl with 1 to 4 carbon atoms, halogenoalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms, alkoxy with 1 to 4 carbon atoms, halogenoalkoxy with 1 to 4 carbon atoms and 1 to 5 halogen atoms, alkylthio with 1 to 4 carbon atoms, halogenoalkylthio with 1 to 4 carbon atoms and 1 to 5 halogen atoms and nitro, and

R^2 and R^3 independently of one another represent hydrogen or straight-chain or branched alkyl with 1 to 4 carbon atoms, or

R^1 and R^2 together represent an alkylene chain with 3 to 5 carbon atoms.

9. A β-keto-trihalogenomethylthio-ether of the formula



(IIc)

in which

R^2 and R^3 independently of one another represent hydrogen or straight-chain or branched alkyl with 1 to 4 carbon atoms,

R^4 represents phenyl or phenyl substituted with substituents selected from the group consisting of halogen, alkyl with 1 to 4 carbon atoms, halogenoalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms, alkoxy with 1 to 4 carbon atoms, halogenoalkoxy with 1 to 4 carbon atoms and 1 to 5 halogen atoms, alkylthio with 1 to 4 carbon atoms, halogenalkylthio with 1 to 4 carbon atoms and 1 to 5 halogen atoms, and nitro and

X represents fluorine or chlorine, at least one X representing chlorine.

4,564,479

PROCESS FOR THE PD-CATALYZED ARYLATION OF OLEFINS WITH ARYL HALIDES

Alwyn Spencer, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

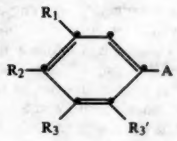
Filed Oct. 29, 1982, Ser. No. 437,704

Claims priority, application Switzerland, Nov. 4, 1981, 7055/81

Int. Cl.⁴ C07C 121/50, 69/76; C07D 407/00, 319/06, 317/00

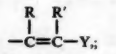
U.S. Cl. 260—465 H 19 Claims

1. A process for the preparation of a compound of formula I



(I)

in which A is



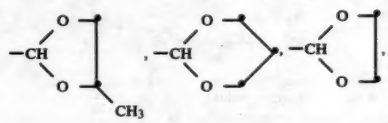
wherein Y is cyano;

R is selected from the group consisting of hydrogen, methyl, cyano, and —COOR″;

R′ is selected from the group consisting of hydrogen, methyl, and $-CH_2COOR''$;

R″ is selected from the group consisting of C_1–C_{12}-alkyl and phenyl;

R_1, R_2, and R_3, independently of one another, are selected from the group consisting of hydrogen, phenyl, C_1–C_8-alkyl, C_1–C_5-alkoxy, $-CH(OCH_3)_2$, $-CH(OC_2H_5)_2$,



OH, halogen, nitro, cyano, —CHO, —CO, —(C_1–C_4)-alkyl, —COO—(C_1–C_4)-alkyl, —NHCO—(C_1–C_4)-alkyl, amino, —NH—(C_1–C_4)-alkyl, —N((C_1–C_4)-alkyl)$_2$ and SO_3M;

R_2 being further selected from the group consisting of —CH=N-phenyl, p-bromophenyl, and $-C(R_4)=C(R_5)(R_6)$;

R_3′ is selected from the group consisting of hydrogen, methyl, cyano, —CHO, and SO_3-phenyl;

R_4 is selected from the group consisting of hydrogen, C_1–C_4-alkyl, cyano, —COO—(C_1–C_4)-alkyl;

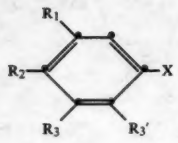
R_5 is selected from the group consisting of hydrogen, C_1–C_4-alkyl, —NHCHO, $-(CH_2)_m-COO-(C_1-C_4)$-alkyl and $-(CH_2)_m-CN$, is which m is 1–4;

R_6 is selected from the group consisting of cyano and —COO—(C_1–C_4)-alkyl; or

R_1 and R_2 are both hydrogen and R_3 and R_3′ together are —CH=CH—CH=CH—; and

M is a monovalent metal cation;

which process comprises reacting a compound of formula II



II

with a compound HA in the presence of

(i) an alkali salt or alkaline earth metal salt of

(a) an aliphatic monocarboxylic acid having 1 to 12 carbon atoms or

(b) benzoic acid;

(ii) a cyclic or N,N-di-substituted amine as a solvent; and

(iii) a palladium catalyst containing arsenic or phosphorous, X being selected from the group consisting of iodine and bromine; A, Y, R, R', R_1, R_2, R_3, and R_3' being as defined above, said palladium catalyst being present in an amount of 0.1 to 0.0001 mole percent based on the compound of formula II, said reaction taking place at a temperature between 50° and 200° C.

4,564,480

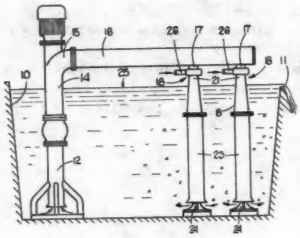
AERATION SYSTEM AND METHOD

Eduard Kamelmacher, 77 Lionel Rd., Brentford, Middlesex, England

Continuation of Ser. No. 971,250, Dec. 20, 1978, abandoned, which is a continuation of Ser. No. 796,166, May 12, 1977, abandoned. This application Aug. 29, 1980, Ser. No. 182,674

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—36 R **16 Claims**



1. A liquid treatment plant for a two-phase, gas-liquid mass transfer process, comprising a tank for containing a liquid so as to provide a gas volume above the liquid surface, means for maintaining said liquid at a predetermined level in said tank, a circulating pump for withdrawing liquid from said tank, a liquid injector pump downstream of said circulating pump, said injector pump having a nozzle opening through which liquid from said circulating pump can pass, an outlet spaced axially a small distance from said nozzle opening, and an inlet passage communicating with the space between said nozzle and said outlet, said inlet passage providing means through which only gas can be drawn as a result of passage of liquid through said nozzle opening to said outlet, a substantially vertical mixing pipe communicating with said outlet and extending from adjacent said predetermined level to a position adjacent the bottom of the tank, and a deflector for urging a gas-liquid stream emerging from said mixing pipe in a direction transverse to the axis thereof, a portion of said injector pump outlet adjacent said nozzle opening having a cross-sectional area of between 1.05 and 1.4 times the cross-sectional area of said nozzle opening, and the cross-sectional area of said mixing pipe being between 4 and 11 times the cross-sectional area of said nozzle opening.

4,564,481

APPARATUS FOR STARTING AND WARMING UP AN INTERNAL COMBUSTION ENGINE

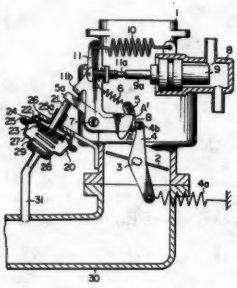
Sunao Kitamura, Ohbu, Japan, assignor to Aisan Kogyo Kabushiki Kaisha, Ohbu, Japan

Filed Sep. 26, 1984, Ser. No. 654,662

Claims priority, application Japan, Oct. 19, 1983, 58-161540[U]

Int. Cl.⁴ F02M *1/10*

U.S. Cl. 261—39 A **4 Claims**



1. An apparatus for controlling the opening degree of a throttle valve during starting and warming up of an internal combustion engine, having a fast idle cam which operates to progressively decrease the opening degree of the throttle valve as the warming up of the engine proceeds, said apparatus comprising:

a starting cam provided separately from said fast idle cam and adapted to maintain a large opening degree of said throttle valve;

a first means for bringing, while the engine is not operating, said starting cam into operative position for holding said throttle valve, in response to a throttle opening operation;

a second means for releasing, when a predetermined engine temperature is reached after the starting of said engine, the holding of said throttle valve by said starting cam and instead bringing said fast idle cam into operation for controlling the opening degree of the throttle valve, and

a throttle lever having a cam engaging portion, said starting cam and said fast idle cam being mounted in side-by-side relationship on opposite sides of an intermediate plane, with each cam engaging said throttle lever portion on opposite sides of said plane.

4,564,482

VARIABLE VENTURI TYPE CARBURETOR

Michio Tahata, Niiza; Masao Okamoto, Asaka, and Hiroshi Enomoto, Ooi, all of Japan, assignors to Honda Giken Kogyo Kabushiki, Tokyo, Japan

Filed Jun. 15, 1984, Ser. No. 621,072

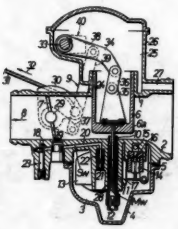
Claims priority, application Japan, Sep. 6, 1983, 58-163698

Int. Cl.⁴ F02M *9/06*

U.S. Cl. 261—44 B **16 Claims**

1. A variable venturi type carburetor comprising a carburetor body having an intake passage, a slide valve slidably supported in said body for travel across said intake passage to function as a variable venturi, a butterfly throttle valve pivotably supported by said body in said intake passage downstream of said slide valve, a low-speed fuel passageway and a main fuel passageway which opens into said intake passage proximate said butterfly throttle valve and directly below said slide valve, respectively, interlocking means operatively connecting said slide valve and said butterfly throttle valve for interlocked operation over a range from their fully closed positions to their fully open positions with a degree of opening of the slide valve higher than that of the butterfly valve by a predetermined

magnitude at least for low opening degrees thereof, said interlocking means being constructed for controlling interlocked opening and closing operations of the slide valve and the butterfly throttle valve such that the slide valve is in open state by a predetermined degree of opening when the butterfly throttle



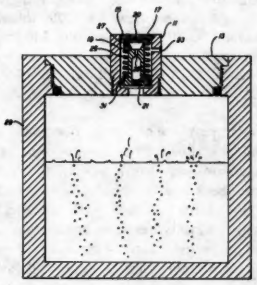
valve is fully closed and the slide valve is completely retracted from the intake passage with no part thereof projecting into the passage in its fully open position, and control means for applying an external force to one of said valves for operating said slide valve and said butterfly throttle valve.

4,564,483

METHOD AND APPARATUS FOR BATCH CARBONATING

Edward L. Jeans, Lydart, Wales, assignor to Cadbury Schweppes, PLC, London, United Kingdom

Filed Nov. 10, 1983, Ser. No. 550,455
Int. Cl.[4] B01F *3/04*
U.S. Cl. 261—64 B **10 Claims**



1. A method of batch carbonating water and then dispensing in a carbonator using carbon dioxide at a supply pressure, such as to result in fast and efficient carbonating and unrestricted dispensing comprising:

(a) disposing a slow feed valve at the inlet of said carbonator, said slow feed valve having a small orifice and larger orifice;

(b) causing a flow of the carbon dioxide through the water being carbonated at a controlled rate by causing carbon dioxide gas to flow in a controlled manner through said small orifice until a predetermined pressure less than the supply pressure is reached in the carbonator and, upon reaching said predetermined pressure effectively terminating flow through said small orifice; and

(c) after said predetermined pressure is reached then allowing gas to flow through said larger orifice.

2. Apparatus for controlling flow of gas in a batch carbonator comprising:

(a) an inlet slow feed valve disposed at the inlet to said carbonator, said inlet slow feed valve containing a small orifice and which will limit flow of gas through water in said carbonator and a valve responsive to the pressure within said carbonator for controlling the flow through said orifice and an orifice of larger size, said valve adapted to maintain said orifice of larger size closed until said predetermined pressure is reached whereupon said valve opens to permit flow through said larger orifice; and

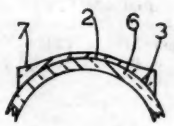
(b) a check valve in said slow feed valve to prevent backflow therethrough.

4,564,484

PRODUCTION OF SOFT LENSES HAVING REDUCED SPHERICAL ABERRATIONS

Charles W. Neefe, 811 Scurry St., P.O. Box 429, Big Spring, Tex. 79720

Filed Nov. 26, 1984, Ser. No. 674,984
Int. Cl.[4] B29D *11/00*
U.S. Cl. 264—2.6 **2 Claims**



1. A method of making a contact lens having reduced spherical aberration when in place on the eye made by the steps of providing an aspheric convex optical mold having a longer radius of curvature at the center and a progressively shorter radius of curvature toward the edge of the mold, casting a selected liquid lens monomer over the aspheric convex mold, allowing the liquid lens monomer to polymerize to form a solid xerogel monolithic lens blank, the aspheric lens blank having a concave aspheric surface is removed from the mold, a spherical convex optical surface is cut and polished on the concave aspheric blank to form a xerogel contact lens, the xerogel contact lens is hydrated to form a hydrogel soft contact lens having a spherical convex surface and an aspheric concave surface, the concave lens surface having a shorter radius of curvature toward the lens edge, the soft hydrogel contact lens is placed on the cornea of the eye and the concave lens surface assumes the curvature of the cornea and the convex lens surface becomes an aspheric surface having a longer radius of curvature toward the lens edge and spherical aberration is reduced.

4,564,485

PROCESS FOR PRODUCING A PLASTIC COMPOSITION WHICH CAN BE PROCESSED INTO A FIRE-RESISTANT MATERIAL

Axel Eschner, Wiesbaden; Rudolf Ganz, Mainz-Gonsenheim; Günter Tkotz, Wiesbaden; Hermann Stein, Bad Durkheim, and Klaus Kreuels, Eltville, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Feb. 16, 1982, Ser. No. 349,244
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1981, 3105593
The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.
Int. Cl.[4] B28B *21/52;* B28C *5/40*
U.S. Cl. 264—30 **32 Claims**

1. A process for producing a shaped plastic composition which can be processed into a fire-resistant material, which comprises:

mixing 100 parts by weight of ceramic fibers with 1 to 3 parts by weight of a substantially dry organic bonding agent to produce a substantially uniformly dispersed first mixture, mixing said first mixture with 10 to 50 parts by weight of

water to produce a substantially uniformly dispersed second mixture,

mixing said second mixture with 10 to 20 parts by weight of clay and 1 to 5 parts by weight of a solid inorganic bonding agent to produce a substantially uniformly dispersed third mixture,

mixing said third mixture with an aqueous solution of 1 to 3 parts by weight of an organic bonding agent to produce a substantially uniformly dispersed fourth mixture, and

extrusion molding said fourth mixture to form said shaped plastic composition,

with the proviso that at least 74% by weight of the solids content in said shaped plastic composition is said ceramic fibers.

26. A plastic composition produced in accordance with the process of either claim 1 or 5.

4,564,486

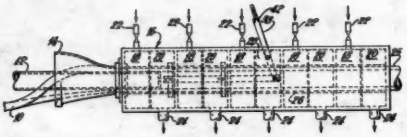
CURING FIBROUS MINERAL MATERIAL

Mark S. Wherry, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 19, 1984, Ser. No. 590,594

Int. Cl.[4] B29C *33/72*

U.S. Cl. 264—39 **8 Claims**



1. Apparatus for curing fibrous mineral material comprising a curing mold through which is advanced the material containing uncured binder thereon, alternating positive and negative pressure zones through which the material passes as the material is advanced through said mold, inlet openings in the walls of said mold for introducing curing gases into the material during advancement through said positive pressure zones, elongated slots in said mold for exhausting curing gases from the material during advancement through said negative pressure zones, and a plurality of members positioned within said elongated slots, said members being mounted for movement within said elongated slots for cleaning said elongated slots without interrupting the advancement of the material through said mold.

4,564,487

METHOD AND APPARATUS FOR MAKING A CONTINUOUS LENGTH OF TUBING HAVING FOAMED PLASTIC WALLS

Larry P. Bennett, Charlotte, N.C., assignor to Lambda Corporation, Charlotte, N.C.

Filed Sep. 19, 1983, Ser. No. 533,501

Int. Cl.[4] B29D *27/04*

U.S. Cl. 264—40.7 **23 Claims**

1. Apparatus for making a continuous length of tubing with walls formed of foamed material, said apparatus comprising:

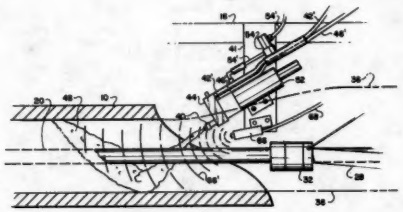
a. a forming cylinder having mandrel means extending centrally along the length of said cylinder;

b. first means for feeding a first strip of flexible material into one end of and through said forming cylinder, and forming said first strip of material into a cylindrical shape about said mandrel;

c. second means for feeding a second strip of flexible material into said one end of and through said forming cylinder, and forming said first strip of material into a cylindrical shape at the interior surface of said forming cylinder;

d. means for injecting a curable foaming plastic mixture into said one end of said forming cylinder and into the annular space between said first and second strips of flexible material; and

e. control means comprising a sensor means disposed adjacent said one end of said forming cylinder for sensing the point along the length of said forming cylinder at which



said foaming plastic mixture begins to cure into a solid across the cross-section of said annular space between said strips of material, and regulating means responsive to said sensing means for selectively varying the speed at which said first and second strips of flexible material are fed through said forming cylinder.

4,564,488

METHODS FOR THE PREPARATION OF POROUS FIBERS AND MEMBRANES

Klaus Gerlach, Aschaffenburg-Obernau, and Erich Kessler, Hoechst, both of Fed. Rep. of Germany, assignors to Akzo NV, Arnhem, Netherlands

Continuation-in-part of Ser. No. 360,631, Mar. 22, 1982, abandoned, and Ser. No. 360,632, Mar. 22, 1982, abandoned, each is a continuation of Ser. No. 61,989, Jun. 30, 1979, abandoned, and Ser. No. 61,990, Jun. 30, 1979, abandoned. This application Jan. 10, 1983, Ser. No. 456,758

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1978, 2833568; Jul. 31, 1978, 2833493; Jul. 31, 1978, 2833623

Int. Cl.[4] B29C *67/20, 47/00;* C08J *9/26*

U.S. Cl. 264—41 **13 Claims**

1. A process for preparation of porous fibers and membranes in the form of flat foils, tube foils or hollow fibers, comprising forming a homogeneous mixture of at least two components, wherein one component is a meltable polymer and a second component is a liquid inert to said polymer which forms a binary mixture with said polymer in its liquid state, said binary mixture in liquid aggregate form exhibiting a temperature range of complete miscibility and a range with a miscibility gap; and extruding said mixture at a temperature above the temperature at which said components separate directly into a bath containing at least some of said inert liquid, said bath having a temperature below said separation temperature, whereby the fiber structure of said porous fiber is fixed.

4,564,489

METHOD AND HOLDER FOR THE MANUFACTURE OF ANNULAR CORES

Jozef T. A. M. Welzen; Theodorus G. W. Stijntjes; Aant B. D. van der Meer, all of Eindhoven; Rudolf O. M. Löbel, and Berend J. Nijhof, both of Uden, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 19, 1983, Ser. No. 533,338

Claims priority, application Netherlands, Sep. 20, 1982, 8203620

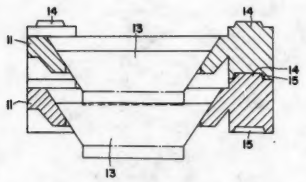
Int. Cl.[4] F27B *9/14*

U.S. Cl. 264—58 **2 Claims**

1. A method of manufacturing rotationally symmetrical flared annular cores of oxide-ceramic ferromagnetic material suitable for a television deflection unit, in which mouldings consisting of compressed starting material and having a flared

outer surface are sintered to form such flared annular ferromagnetic cores, comprising:

locating each of said mouldings in an individual holder, each holder having a substantially square base, the corners of which have a projection one one side thereof and a matching recess on the other side thereof so that the projections of one base may be fitted into the recesses of another base, said base including a central aperture connected with a



frustoconical wall tapered to support one of said mouldings along a portion of said flared outer surface;

stacking the holders having mouldings therein in a vertical column by fitting the projections of one base into the recesses of another base; and

sintering said stacked mouldings, said mouldings during sintering being free to slide in contact with said frustoconical wall in response to expansion and contraction of said moulding without cracking said molding.

4,564,490

METHOD OF PREPARING SINTERED SHAPES OF SILICON CARBIDE

Mamoru Omori, 2-18-1, Kano, Sendai-shi, Miyagi-ken, and Humihiko Takei, Sendai, both of Japan, assignors to Mamoru Omori, Miyagi, Japan

Continuation-in-part of Ser. No. 361,299, Mar. 24, 1982, abandoned. This application Jun. 1, 1984, Ser. No. 616,787

Claims priority, application Japan, Mar. 27, 1981, 56-44109

Int. Cl.⁴ C04B *35/56*

U.S. Cl. 264—65 **2 Claims**

1. A method for producing sintered silicon carbide shapes of high strength, including the steps of addition and mixing sintering assists with silicon carbide powder, and separate or simultaneous compacting and sintering of the mixture at a temperature in the range of approximately 1300° C. to 2300° C., wherein the sintering assists are selected from the group consisting of (a) a solution of at least one member selected from the group of rare earth compounds, and (b) a solution of at least one member selected from the group of rare earth compounds and another solution of at least one member selected from the group consisting of aluminum compounds and boron compounds; and when the sintering assists in group (a) are used, 0.027–11.300 atomic % of rare earth compounds are used, on a rare earth oxide basis, with the total sum of SiC and assists being 100 atomic %; and when the sintering assists in group (b) are used, 0.021–11.300 atomic % of rare earth compounds, on a rare earth oxide basis, and 0.008–12.000 atomic % of aluminum, boron and their compounds, based on their respective oxides are used, with the total sum of SiC and the assists being 100 atomic %.

4,564,491

PREPARING GLASS FLAKE REINFORCED REACTION INJECTION MOLDED POLYMERS

Raymond J. Koestecki, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 353,562, Mar. 1, 1982, abandoned. This application Jan. 16, 1984, Ser. No. 570,905

Int. Cl.⁴ B29C *45/16*; B29K *75/00*

U.S. Cl. 264—108 **9 Claims**

1. A method of molding a reinforced polymeric panel by injecting a hardenable liquid polymer precursor carrying high aspect ratio glass flake particles into a mold cavity defining said panel, the initial injection pressure of said glass flake carrying liquid being at least about 2000 pounds per square inch, causing said liquid to flow away from the point of injection such that said glass flakes are layered with their planar surfaces substantially parallel to the planar surfaces of the panel as the mold is filled, and immediately gelling said liquid precursor in the mold such that the glass flakes are captivated in the hardened polymeric panel in said layered positions, the amount of said glass flake dispersed in said precursor being such that the hardened panel has a reduced coefficient of thermal expansion in all directions in the plane of the panel compared to a like unfilled panel and a substantially less wavy surface than a like glass fiber filled panel both having been molded from the liquid polymer precursor in like manner.

4,564,492

POLYACETYLENE PRODUCTION

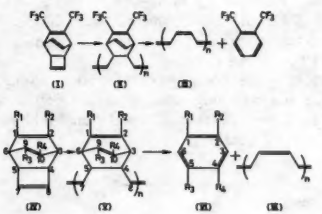
David C. Bott, Woking, and Donald White, Sunbury-on-Thames, both of England, assignors to The British Petroleum Company, p.l.c., London, England

Filed Mar. 20, 1984, Ser. No. 591,470

Claims priority, application United Kingdom, Apr. 8, 1983, 8309583

Int. Cl.⁴ B29D *7/02*

U.S. Cl. 264—154 **11 Claims**



1. A process for producing an oriented, crystalline poly(acetylene) (III) in film or fibrillar form comprising solvent casting a film from a solution of precursor polymer of the general formula (V) derived from a precursor monomer (IV), and transforming under tension or in a stress field the pre-cast precursor polymer (V) into an oriented, crystalline film or fibrillar form of the poly(acetylene) (III) and a by-product (VI) at a temperature between 20° and 200° C. under reduced pressure over a duration of between 1 and 100 hours in an atmosphere inert to the precursor polymer (V) film and to the poly(acetylene) (III), wherein in the general formulae IV, V and VI each of the groups R_1 and R_2

either (a) represent a radical selected from H, CX_3, C_mH_{2m+1} and $COOR_5$ wherein X is a halogen atom, m has a value between 1 and 4 and R_5 is an alkyl group with 1–4 carbon atoms,

or (b) form together with the respective carbon atoms to which they are attached a benzene nucleus,

and

each of R_3 and R_4

either (c) represent H atoms,

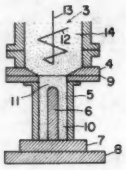
or (d) form together with the respective carbon atoms to which they are attached a benzene nucleus.

4,564,493

METHOD OF MANUFACTURING A CASTING NOZZLE BRICK

Tsuneo Shintani, Kitakyushu; Soichi Kojima, and Masuo Goto, both of Okayama, all of Japan, assignors to Kurosaki Refractories Co., Ltd., Kitakyushu and Kurosaki Rozai Co., Ltd., Bizen, both of, Japan

Continuation of Ser. No. 347,418, Feb. 10, 1982, abandoned.
This application Apr. 20, 1984, Ser. No. 602,097
Claims priority, application Japan, Feb. 13, 1981, 56-19908; Jul. 10, 1981, 56-107965; Jul. 10, 1981, 56-111905
Int. Cl.[4] B29D *23/04*
U.S. Cl. 264—209.1 7 Claims



1. A method of manufacturing a graphitic casting nozzle brick using an auger machine having an extrusion screw and an extrusion die, comprising the steps of:

providing a mold connected to the extrusion die and including a central core therein which terminates short of said extrusion die;

extruding a mass of graphitic material through said extrusion die into said mold without separating and rejoining said mass during said extruding and after leaving contact with said screw and prior to contact with said core and forming a graphitic casting nozzle brick therein which has a longitudinal bore defined by said central core with one axial end of the bore closed, wherein said graphitic material is a mixture comprising graphite in an amount of at least 10% by weight; and

providing at least one stage of deaeration in said auger machine and dearating said graphitic material thereby in order to prevent lamination and enhance compact structure of said nozzle.

4,564,494

ENCAPSULANT OF CDTE BOULES FOR MULTIBLADE WAFERING

Thomas E. Nohava, Inver Grove Heights, and Joseph L. Schmit, Hopkins, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 395,521, Jul. 6, 1982, Pat. No. 4,490,441.
This application Jul. 20, 1984, Ser. No. 632,980
Int. Cl.[4] B29D *7/18*
U.S. Cl. 264—275 2 Claims

1. A process for preparing a boule of crystalline cadmium telluride for multiblade sawing into wafers by encapsulating the boule, comprising the steps of:

determining the (III) orientation of a single crystal within a cadmium telluride boule;

orienting the boule within a mold so that the boule can be cut along the (III) plane;

filling the mold with a casting mixture of β-phase calcium sulfate hemihydrate and α-phase calcium sulfate hemihydrate and water; and,

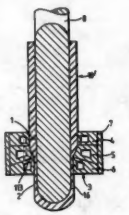
curing the casting mixture to encapsulate and support the boule wherein, the hardness of the cured mixture has about the same cutting rate as the cutting rate of the cadmium telluride boule.

4,564,495

METHOD OF PRODUCING A CONTAINER

Torsten Nilsson, Prämvägen, and Kjell M. Jakobsen, Hökvägen, both of Sweden, assignors to PLM AB, Malmo, Sweden

Filed Nov. 23, 1982, Ser. No. 443,918
Claims priority, application Sweden, Nov. 26, 1981, 8107045
The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.
Int. Cl.[4] B29C *17/02, 17/07*
U.S. Cl. 264—291 7 Claims



1. A method of producing a container of thermoplastic material, preferably of polyethylene terephthalate (PET) from a tubular blank of amorphous material, said container having a body and a mouth portion, said method comprising reducing the wall thickness of a tubular blank of amorphous material while concurrently elongating the blank at a temperature conducive to orientation to orient the material of the thus stretched blank by engaging a mechanical forming element with said blank to form a transition zone between amorphous, thicker material and oriented, thinner material and relatively moving said blank and forming element to move said transition zone axially of the blank while concurrently elongating the blank, heating the thus stretched blank to a temperature above the temperature of the blank immediately before stretching to relieve internal stresses produced in said material during stretching, forming the container from the stretched blank in successive forming stages, and maintaining the temperature in each forming stage lower than the temperature in the immediately preceding forming stage.

4,564,496

METHOD OF MAKING POROUS SILICON CARBIDE BODIES

Ashok K. Gupta; Ernö Gyarmati, both of Jülich; Hermann Kreutz, Monchen-Gladbach; Rudolf Münzer, Alsdorf; Aristides Naoumidis, and Hubertus Nickel, both of Jülich, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 352,006, Feb. 24, 1982, abandoned.
This application Jun. 10, 1985, Ser. No. 742,654
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1981, 3108266
Int. Cl.[4] C01B *31/36*
U.S. Cl. 264—44 12 Claims

1. Method of producing porous silicon carbide bodies comprising the steps of:

preparing a carbon precursor body having a density between 0.5 and 0.9 g/cm^3 by the substeps of:

mixing a cokable organic binder with a carbon powder of a minimum grain size not less than 50 μm and having a degree of uniformity of grain size such that the maximum grain size is not more than twice the minimum grain size, said binder providing between 15 and 30% by weight of the mixture;

pressing said mixture to form a precursor body;

heating said precursor body to drive off volatile components at a temperature between 40° and 200° C.; and

further heating said precursor body up to 850° C. and thereby coking said binder; and

heating said precursor body in contact with gaseous silicon at a temperature between 1650° and 1950° C. to convert the material of said body substantially to porous silicon carbide.

4,564,497

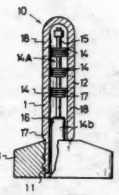
METHOD OF PRODUCING BOTTLES OF SATURATED POLYESTER

Akiho Ota, Tokyo, and Yukio Koshidaka, Tochigi, both of Japan, assignors to Yoshino Kogyosho Co., Ltd., Japan

Continuation of Ser. No. 402,653, Jul. 28, 1982, abandoned, which is a continuation of Ser. No. 68,242, Aug. 20, 1979, abandoned. This application May 7, 1984, Ser. No. 607,724

Int. Cl.⁴ B29C *17/07*

U.S. Cl. 264—521 **5 Claims**



1. A method of producing a polyester resin bottle, having whitened and transparent regions, from a transparent parison comprising:

forming a substantially cylindrical transparent polyester resin parison; inserting into said parison a pattern forming device having at least one heat absorbing element positioned thereon so that at least one heat absorbing element contacts the interior wall of said parison and no other portion of said pattern forming device other than at least one heat absorbing element contacts said parison;

applying heat to an outer surface of said parison and simultaneously absorbing heat from a portion of an inner surface of said parison by means of said pattern forming device, said element contacting said portion of said inner surface of said parison thereby preventing whitening of a portion of said outer surface opposite said heat absorbing element, while those portions of said outer surface not opposite said heat absorbing element are whitened and the entire inner surface of said pairson remains unwhitened; and blow-molding said parison into a resin bottle.

4,564,498

SYSTEM FOR THE ANALYSIS OF NUCLEAR FUEL RODS

Leonard N. Grossman, Bratenahl, Ohio; James D. Landry, Wilmington, N.C.; William Masaitis, Castle Hayne, N.C.; Robert O. Canada, and Gerald W. McKenzie, both of Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Filed Oct. 26, 1982, Ser. No. 436,921

Int. Cl.⁴ G21C *17/00*

U.S. Cl. 376—245 **9 Claims**

1. A system for analyzing the additive, paramagnetic material content of a nuclear fuel rod, said rod further including a base paramagnetic material and ferromagnetic impurities, the susceptibility of said additive material being measurably larger than that of said base material;

said system comprising:

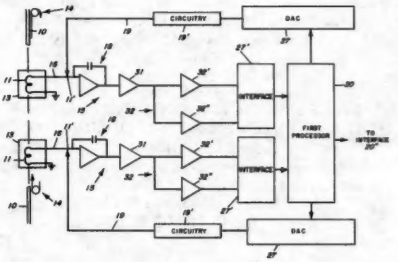
means for establishing a pair of direct current magnetic fields of different strengths;

first and second inductive coils each positioned in one of said magnetic fields;

means for moving said nuclear fuel rods through said inductive coils to provide an electrical output indication from each coil representative of susceptibility changes caused by the movement of said fuel rod through said coil;

first and second signal channels coupled to said first and second coils respectively, each of said channels including an integrating means at the channel input followed by a plurality of serially connected amplifier stages, each of said channels being responsive to said output indication of the corresponding coil to provide a channel output signal including a quiescent signal portion when said fuel rod is absent from both of said coils;

means for establishing a reference value corresponding to each of said quiescent signals;



means corresponding to each of said channels for correcting signal drift in said channel, said drift correction means including means for repeatedly sampling said quiescent signal, means for averaging said sampled signals, means for comparing said averaged quiescent signal with the corresponding reference value, means responsive to said comparing means for deriving a drift correction signal, and feedback means for applying said drift correction signal to said channel input; and

means for analyzing the output signals derived from respective ones of said channels when said fuel rod passes through said coils to determine said additive paramagnetic material content.

4,564,499

METHOD OF INHIBITING CORROSION OF CARBON STEEL PIPING OF CONDENSATE AND FEED WATER SYSTEMS IN POWER GENERATING PLANT

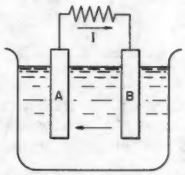
Takashi Honda, Katsuta; Akira Minato, Hitachi; Masakiyo Izumiya, Mito; Eizi Kashimura, and Katsumi Ohsumi, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 347,033, Feb. 8, 1982, which is a continuation-in-part of Ser. No. 156,640, Jun. 4, 1980, abandoned. This application Oct. 29, 1984, Ser. No. 666,033

Claims priority, application Japan, Jun. 8, 1979, 54-71201

Int. Cl.⁴ G21C *9/00*

U.S. Cl. 376—305 **19 Claims**



1. A method of inhibiting corrosion of metallic piping of condensate and feed water systems in a power generating plant having a heat generator, during shutdown of said plant, characterized by continuing the water in said piping to flow, at a

flow velocity of at least 0.2 cm/sec, after said plant has been shut down until it is restarted up, the water being kept flowing in the piping without flowing through the heat generator of the power generating plant, and by keeping the specific electric conductivity of the flowing water at 0.5 μS/cm or less, and wherein the dissolved oxygen concentration of said water is 40 to 30,000 ppb, whereby the dissolving of at least 40 ppb oxygen in the water, together with continuation of the water flow and keeping the specific electrical conductivity at 0.5 μS/cm or less, passivates the metal of the piping and prevents corrosion thereof.

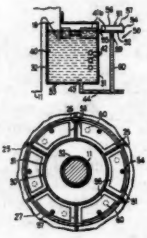
8. A method of inhibiting corrosion of metallic piping of condensate and feed water systems in a power generating plant as claimed in claim 1, wherein said piping is made of at least one material selected from the group consisting of carbon steel, low alloy steel, stainless steel, and copper and its alloys.

4,564,500

OIL POT FOR REACTOR COOLANT PUMP MOTOR AND APPARATUS FOR CONTROLLING THE OIL LEVEL THEREIN

Richard J. Keady, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 25, 1983, Ser. No. 545,420
Int. Cl.[4] G21C *9/00*
U.S. Cl. 376—463 **3 Claims**



1. Apparatus for controlling the level of bearing lubricating oil in an oil pot of a nuclear reactor coolant pump motor with the oil pot having a substantially flat bottom and a predetermined normal oil level, said apparatus comprising: a plurality of containers, substantially equidistantly spaced apart around the perimeter of the oil pot with at least one said containers being substantially closed and vented and with each of said containers having a surface area which is relatively large in comparison to its depth, each of said containers having a flat planar bottom surface disposed substantially at the normal oil level of the oil pot, and an unobstructed fluid conduit connected between the bottom of the oil pot and the bottom surface of each of said containers for providing liquid communication between the oil pot and each of said containers so as to equalize the oil levels therein, whereby an increase in the volume of the oil produces an increase in the oil level in said containers inversely proportional to the surface area of the oil in containers.

4,564,501

APPLYING PRESSURE WHILE ARTICLE COOLS

David Goldstein, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 5, 1984, Ser. No. 627,938
Int. Cl.[4] B22F *3/14*
U.S. Cl. 419—25 **10 Claims**

1. In a process for consolidating powder metals comprising the steps for

(a) placing unconsolidated powder nickel-titanium alloy comprising from 53 to 62 weight percent of nickel the remainder of the alloy being essentially titanium in a sealable glass mold which becomes plastic upon heating,

(b) evacuating the atmosphere from the powder filled mold,

(c) sealing the mold,

(d) placing the mold in a open top refractory container and packing with free flowing refractory powder selected to freely flow at all the temperatures used in the process,

(e) heating the mold and contents of the mold to a temperature at which sintering of the powder metal takes place and holding at this temperature for a time sufficient to cause substantially complete densification of the powder nickel-titanium alloy,

(f) cooling and removing the mold to recover a dense article, and

whereby the glass mold is supported by the free flowing refractory powder as the mold becomes plastic and shrinks in volume as its contents densify,

the improvement comprising:

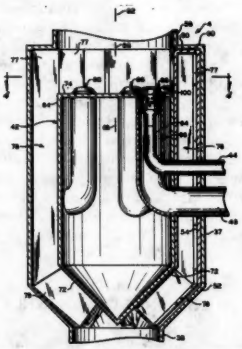
after step (e), transferring the open top refractory container, refractory powder, glass mold, and nickel-titanium object directly into an insulated, refractory lined covered container and then placing the covered container into a pressure chamber and applying an isostatic pressure of 2,000 psi or more to the nickel-titanium alloy object while it slowly cools down.

4,564,502

APPARATUS FOR MIXING OF FLUIDIZED SOLIDS AND FLUIDS

Frank W. Skraba, Sweeny, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 29, 1984, Ser. No. 645,386
Int. Cl.[4] B01J *8/20, 8/22*
U.S. Cl. 422—140 **20 Claims**



1. An apparatus comprising:

(a) an outer hollow elongated member having an upper end, a lower end, and an interior surface;

(b) an inner elongated member having an upper end, a lower end and an outer surface, said inner member being mounted within said outer member so as to extend axially into said outer member from the lower end of said outer member, a space being defined between the interior surface of said outer member and the outer surface of said inner member;

(c) a plurality of filler elements within said space so as to define a limited flow path within said space;

(d) means for introducing a fluidized solid into said space at the lower ends of said members;

(e) means for directing the fluidized solid across the upper end of said inner member;

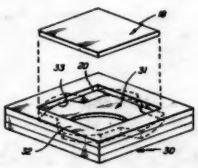
(f) means for releasing a fluid into said outer member from the upper end of said inner member.

4,564,503

MOUNT FOR FRAGILE TEST ELEMENT

Danny L. Greisch, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 15, 1983, Ser. No. 523,489
Int. Cl.[4] B01L 9/00
U.S. Cl. 422—104 2 Claims



1. An article of manufacture comprising:
a non-circular, substantially planar, at least partially fragile object;
a mount having said object retained therein;
walls defining a recess in said mount adapted to permit insertion of said object into said recess along a predetermined axis;
at least one overhang above an undercut in said walls, said undercut constructed so that rotation of said object about said axis positions a part of said object within said undercut;
means for engaging said part of said object in its rotated position with said mount so that further rotation of said object is inhibited, wherein said means for engaging said object with said mount is at least one point at which said part of said object and said mount are embossed together, whereby said object is secured in said mount.

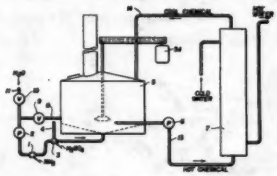
4,564,504

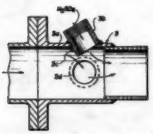
APPARATUS FOR PRODUCING AN ACID COMPOUND

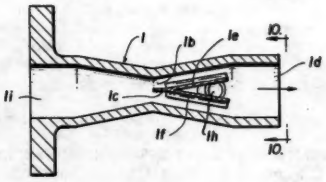
Kenneth H. Sorber, Atlanta, Nebr., assignor to Sorco Corporation, Odessa, Nebr.

Filed Nov. 29, 1983, Ser. No. 556,091
Int. Cl.[4] B01J 14/00, 19/02; C01C 1/242; F28D 7/00
U.S. Cl. 422—189 3 Claims

1. Apparatus for producing an acid compound comprising: a first reactor having a first inlet through which an aqueous medium is pumped, a second inlet through which ammonia is injected and an outlet, said first reactor comprising, a venturi section having a mixing deflector rigidly mounted in the throat portion thereof, said mixing deflector comprising a stem portion extending axially from the throat portion of the venturi section toward the outlet thereof, said stem terminating in a pair of divergent fingers secured to the interior side wall of said venturi section, said fingers having an arcuate cross-section, said first inlet of the first reactor communicating with the upstream side of said venturi section, said second inlet of the first reactor comprising an inclined fitting secured to the side wall of the venturi section in proximity to the divergent fingers, said outlet of the first reactor communicating with the downstream side of said venturi section whereby ammonia is injected into the venturi section through said second inlet of the first reactor and mixed with the aqueous medium flowing through the first inlet of the first reactor and into the venturi section resulting in a reaction temperature of approximately 350° F. and forming an aqueous ammonia mixture; a second reactor comprising a pipe having a first inlet communicating with the outlet of the first reactor, a second inlet through which sulfuric acid is injected and an outlet, said second inlet of the second reactor comprising an inclined fitting secured to the side wall of said pipe, a portion of said fitting extending into said pipe to form a baffle to facilitate the mixing of the sulfuric acid and the aqueous ammonia mixture resulting in an exothermic reaction temperature of approximately 1100° F., to thereby form an acidic compound; a vat having a top portion and a bottom portion, the outlet of said second reactor communicating with the bottom portion of said vat; a cooling tower comprising a housing having a top portion and a bottom portion; a first communicating means connecting to the bottom portion of said vat and the bottom portion of said cooling tower for conveying the hot acidic compound from the bottom







of the vat to the bottom of said cooling tower; and a second communicating means connected to the top portion of said cooling tower and the top portion of said vat for returning cooled acidic compound from the cooling tower to the vat to maintain the acidic compound in the vat at approximately 200° F.

4,564,505

PROCESS AND APPARATUS FOR SIMULTANEOUS MATERIAL GRANULATION AND CLASSIFICATION

Norval K. Alfrey, Rte. 9, Box 143B, Lake City, Fla. 32055

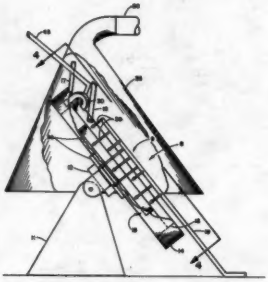
Filed Mar. 9, 1984, Ser. No. 587,890
Int. Cl.[4] B01J 8/10
U.S. Cl. 422—209 3 Claims

1. An apparatus for simultaneous feedstock material granulation and classification, comprising:
(a) a rotary granulation-classifier having a circular floor having a plurality of annular tiers an annular outer wall, pivotally and rotatably attached to a stationary base and titled at an acute angle maintained between 36° and 44° to horizontal;
(b) a stationary base having an upper end and a lower end, fixedly attached to a surface at said lower end and rotatably and pivotally attached to said granulator-classifier at said upper end;
(c) a power means, connected to said granulator-classifier, for rotating said granulator-classifier at a desired speed;
(d) a heat application means comprising a plurality of nozzles fixedly positioned at a desired distance from a portion

of said floor of said granulator-classifier, for directing heated gases into a portion of said granulator-classifier as said granulator-classifier rotates;

(e) a heat exchange means connected to a preheated feedstock transfer means, for preheating feedstock material prior to introduction of said feedstock material into said granulator-classifier;

(f) a preheated feedstock transfer means, connected between said heat exchange means and said granulator-classifier,



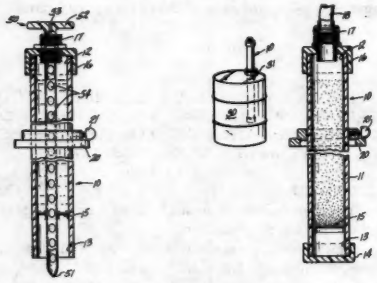
for transferring said feedstock material from said heat exchange means to said granulator-classifier; and wherein said heat exchange means comprises an annular trough, rectangular in section, fixedly attached to said outer wall of said granulator-classifier; and said preheated feedstock transfer means comprises at least one stationary transfer plow means, positioned between said trough and said granulator-classifier, for scooping said feedstock from said trough and transferring said feedstock over said feedstock said outer wall into said granulator-classifier.

4,564,506

WATER TREATMENT DISPENSING SYSTEM

Lorraine E. Saputo, and Vincent J. Saputo, both of 202 Crosswoods Rd., Branford, Conn. 06405

Filed May 23, 1983, Ser. No. 497,089
Int. Cl.[4] B67C *3/30*
U.S. Cl. 422—266 **7 Claims**



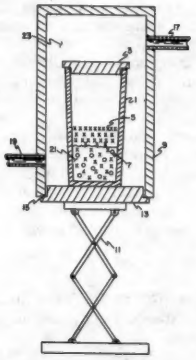
1. The combination of a storage container for storing concentrated chemicals and a storage receptale engageable with a water source for diluting said chemicals and providing same in diluted form for storage in said receptacle which comprises: a storage receptacle having an inlet means; an elongated generally cylindrical storage container; a storage container outlet on said storage container insertable within said storage receptacle inlet means; a storage container inlet on said storage container spaced from said outlet; a concentrated chemical storage compartment within said storage container for storing a predetermined amount of concentrated chemical within said storage container and communicating with said outlet and inlet of said storage container; openable sealing means inside said storage container adjacent the storage compartment for sealing the chemical within said storage compartment when said sealing means is closed and releasing the chemical when said sealing means is open; a collar on said storage container comprising means for engaging the storage container and means for engaging the receptacle inlet means for fixedly securing said storage container to said receptacle inlet means; and means on said storage container inlet for engaging a water source supply means.

4,564,507

REDUCTIVE DECONTAMINATION OF MAGNESIUM FLUORIDE

Guy R. B. Elliott, 133 La Senda Rd., Los Alamos, N. Mex. 87544

Filed Oct. 24, 1983, Ser. No. 544,472
Int. Cl.[4] C01G *43/00*; G21F *9/00*
U.S. Cl. 423—5 **12 Claims**



1. A method for separating radioactive components from magnesium-fluoride residues resulting from the magnesium reduction or uranium fluoride, comprising: (a) charging a container with radioactive magnesium-fluoride residues, at least one reactant selected from the group consisting of magnesium, magnesium alloys, lithium, calcium, barium, strontium, and the rare-earth metals, and with carbon, (b) heating the said container, in an inert atmosphere, until substantial melting of said residues is achieved thus causing said residues to react with said at least one reactant and carbon to form molten MgF_2 and uranium carbide, and (c) separating the resulting uranium carbide, which is essentially insoluble in the molten MgF_2, from said molten MgF_2, which is thus substantially radioactive free.

4,564,508

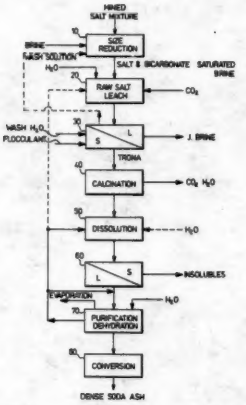
PROCESS FOR THE RECOVERY OF SODIUM CARBONATE FROM SALT MIXTURES

Michael J. Fairweather; Michael A. Rockandel, both of Rossland, Canada; Abraham Sadan, Salt Lake City, Utah, and Godefridus M. Swinkels, Rossland, Canada, assignors to Cominco Ltd., Vancouver, Canada

Filed Aug. 21, 1984, Ser. No. 642,797
Int. Cl.[4] C01D *17/14*; B01D *9/00*
U.S. Cl. 423—189 **10 Claims**

1. A process for the recovery of sodium carbonate from salt deposits comprising sodium carbonate, sodium bicarbonate, sodium sulfate, sodium chloride, trona and burkeite, which process comprises subjecting solid raw salt obtained from such

deposits to a raw salt leach with a solution substantially saturated with sodium bicarbonate whereby the sodium sulfate, sodium chloride, and burkeite are preferentially dissolved into a leach solution and the trona is substantially left in a leach residue; maintaining a sodium chloride content in the leach of above about 5%; adding a controlled amount of carbon dioxide to the raw salt leach, said amount being sufficient to convert sodium carbonate released by the dissolution of the burkeite and the sodium carbonate in the raw salt to trona and insufficient to precipitate sodium bicarbonate; precipitating additional trona by the carbonation of sodium carbonate dissolved from the burkeite and the sodium carbonate in the raw salt; carrying out the leach so as to form a raw salt leach slurry of a raw salt leach residue consisting mainly of trona and a raw salt leach solution consisting of substantially J brine, said J brine approaching saturation with respect to sodium bicarbonate, trona and sodium sulfate; separating the leach solution of substantially J brine from the leach residue substantially consisting of trona; and recovering said trona.



4,564,509

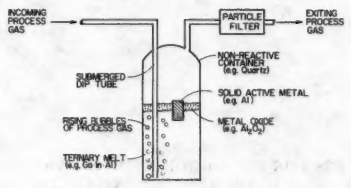
METHOD AND APPARATUS FOR IMPROVED GETTERING FOR REACTANT GASES

James R. Shealy, and Lester F. Eastman, both of Ithaca, N.Y., assignors to Northeast Semiconductor Inc., Ithaca, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,871

Int. Cl.[4] B01D *47/02*

U.S. Cl. 423—210.5 **17 Claims**



1. A method of treating reactant gases by removing oxygen and water vapor and other oxygen bearing gas species, including trace amounts thereof, comprising the steps of:

a. in a nonreactive container containing a liquid solution comprising a ternary melt of gallium-indium and calcium as an active gettering metal in liquid phase, bubbling the reactant gas through a liquid solution at a operating temperature in the range from a low room temperature at least high enough that the solution remains liquid, up to a temperature below that at which the gas being treated would thermally decompose or a significant amount of vapor from the calcium component of the melt is incorporated in the reactant gas being processed, whereby oxygen in the gas reacts with the calcium to form calcium oxides and the degree of purification depends on the completion of the oxidation of the calcium being within the time required for the oxygen bearing species in the reactant gas to reach the bubbles outer edge where the reaction with the calcium occurs, the time required being directly dependent on the height of the ternary melt relative to the size of the bubble;

b. maintaining a quantity of the calcium in the ternary melt in solid form, so that theternary melt remains saturated with the calcium, whereby the calcium removed from the ternary melt in the form of oxides is replaced from the solid calcium.

4,564,510

METHOD FOR REMOVING NITROGEN OXIDES FROM WASTE GASES

Horst Bechthold, Erftstadt-Friesheim; Heinz J. Fischer, Neunkirchen-Seelscheid, and Wolfgang Schulte, Monheim, all of Fed. Rep. of Germany, assignors to Buckau-Walther Aktiengesellschaft, Grevenbroich, Fed. Rep. of Germany

Filed Jul. 27, 1983, Ser. No. 517,789

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1982, 3233316

Int. Cl.[4] C01B *21/00, 21/48;* **C01C** *1/18*

U.S. Cl. 423—235 **4 Claims**

1. A method of removing nitrogen oxides from waste gases, comprising the steps of:

(a) oxidizing the nitrogen oxides in the waste gases by contacting the waste gases in the gas phase with ozone to form NO_2;

(b) contacting the formed NO_2 in an absorbing stage with an absorbing agent selected from the group consisting of ammonia, a calcium compound and a sodium compound to form a solution comprising nitrates and nitrites of a cation selected from the group consisting of ammonium, calcium and sodium while substituting fresh water for vaporized water in corresponding amounts during said absorption;

(c) processing the resultant solution by contacting it with an oxidizing agent in a subsequent oxidation step to oxidize nitrites contained therein and to produce a solution predominantly comprising nitrates selected from the group consisting of ammonium, calcium, and sodium nitrates;

(d) maintaining the pH of the solution during said oxidation step at between about 3 and about 4 by the addition of an acid selected from the group consisting of nitric acid and sulfuric acid

(e) drying the resultant solution after said oxidation step; and,

(f) pelletizing the resultant product.

4,564,511

SYNTHESIS OF MOLECULAR SIEVING METALLOSILICATES USING HETEROPOLYMETALLATES

Michael J. Desmond, Cleveland Hts., and Frederick A. Pesa, Aurora, both of Ohio, assignors to The Standard Oil Company (Ohio), Cleveland, Ohio

Filed Nov. 16, 1984, Ser. No. 672,394

Int. Cl.[4] C01B *35/10*

U.S. Cl. 423—277 **38 Claims**

1. A method for preparing a molecular sieving metallosilicate comprising

(A) providing a mixture comprising: water; an oxide of silicon source; a mineralizing agent and/or synthesis directing agent; and a heteropolymetallate of the formula

$$A_a[L_lM_mJ_zO_y].dH_2O$$

wherein

A is an ion selected from the group consisting of hydrogen; one or more of the Group I-A to VI-A or Group I-B to VI-B metals; one or more of the rare earth metals; ammonium, alkyl ammonium, alkyl phosphonium or alkyl arsonium; or a mixture of two or more thereof;

M is Zn, Ga, Ge, Ti, Cr, Mn, Fe, Co, B, Ni, Rh, Zr or a mixture of two or more thereof;

L is P, As, Si, Al, H or a mixture of two or more thereof;

J is Mo, W, V, Nb or a mixture of two or more thereof;

a is a number which when multiplied by the charge of A will result in balancing the charge on the complex within the brackets;

l is a number ranging from zero to about 20;

m is a number ranging from zero to about 20;

z is a number ranging from about 1 to about 50;

y is a number ranging from about 7 to about 150;

d is a number ranging from about zero to about 150; and

(B) maintaining said mixture at a temperature of about 80° C. to about 300° C. for an effective period of time to form said molecular sieving metallosilicate.

4,564,512

PROCESS FOR THE PRODUCTION OF COARSE PARTICLE MORDENITE

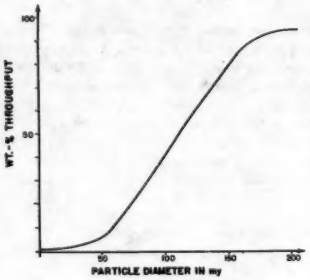
Michael Baacke, and Peter Kleinschmit, both of Hanau, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 1, 1982, Ser. No. 432,294

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1981, 3146153; Apr. 1, 1982, 3212106

Int. Cl.⁴ C01B *33/28*

U.S. Cl. 423—328 **1 Claim**



PARTICLE ANALYSIS
COULTER COUNTER

1. A process for the production of mordenite particles having a size between 20 μm and 300 μm consisting essentially of heating a reaction mixture consisting essentially of sodium aluminate, sodium chloride, and sodium hydroxide dissolved in water and silica suspended in the water, the reaction mixture having the composition 6.5 moles Na_2O, 1 mole Al_2O_3, 30 moles SiO_2, 1400 moles H_2O, and 20 moles NaCl to a temperature of 140° to 180° C. until the formation of mordenite crystals, separating off the crystalline product, washing and drying it.

4,564,513

PROCESS FOR THE PRODUCTION OF CARBON MONOXIDE

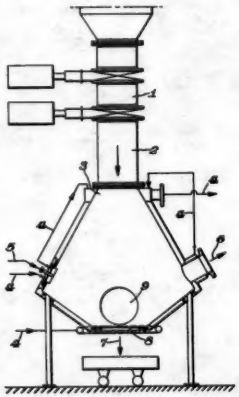
Dieter Becher, Brunsbuettel; Christian König, Kaarst; Eckhard Tiemann, Dormagen; Hans Czwalinna, Pulheim, and Wilhelm Hagen, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 29, 1984, Ser. No. 665,724

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1983, 3340929

Int. Cl.⁴ C01B *1/04, 31/18*

U.S. Cl. 423—415 A **10 Claims**



1. In a process for the production of carbon monoxide in a carbon-filled, water-cooled generator in the configuration of a truncated cone in the longitudinal section, by the gasification of said carbon with a mixed gas of oxygen and carbon dioxide, wherein the improvement comprises injecting the mixed gas into the generator through at least one downwardly-directed, coolable nozzle arranged in the generator sidewall and removing the carbon monoxide formed in a direction opposite to the nozzle orientation at the side or head of the generator.

4,564,514

PROCESS FOR THE PRODUCTION OF WATER-FREE ORGANIC HYDROGEN PEROXIDE SOLUTION

Karlheinz Drauz, Freigericht; Axel Kleemann, and Rolf Wirthwein, both of Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 510,162

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1982, 3225307; Mar. 11, 1983, 3308740

Int. Cl.⁴ C01B *15/023*

U.S. Cl. 423—589 **43 Claims**

16. A process wherein the azeotrope consists of water and the ester.

4,564,515
METHOD FOR SEPARATING AT LEAST ONE HEAVY ISOTOPE FROM A HYDROGEN-CONTAINING MEDIUM

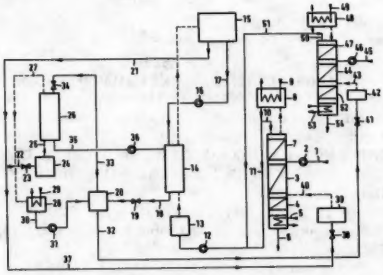
Charles Mandrin, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 2, 1984, Ser. No. 606,376

Claims priority, application Switzerland, May 5, 1983, 2453/83

Int. Cl.⁴ C01C *1/04*

U.S. Cl. 423—648 A **5 Claims**



1. A method of separating at least one heavy isotope from a hydrogen-containing medium comprising the steps of

bringing a flow of deuterium and tritium containing feed water into a first isotope exchange with a flow of ammonia vapor depleted in deuterium and tritium with the ammonia molar throughput being greater than two-thirds of the water molar throughput;

depleting the flow of water almost completely of deuterium and tritium during said isotope exchange to obtain water depleted of deuterium and tritium as a product while enriching the flow of ammonia vapor in deuterium and tritium to obtain ammonia vapor enriched with deuterium and tritium at a concentration lower than the concentration of deuterium and tritium in the feed water;

thereafter liquefying the enriched ammonia vapor;

separating the enriched liquid ammonia into a mixture of hydrogen and nitrogen;

bringing a flow of the mixture of hydrogen and nitrogen into a second isotope exchange with a flow of liquid ammonia depleted of deuterium and tritium to deplete the mixture of deuterium and tritium while enriching the flow of liquid ammonia in deuterium and tritium;

synthesizing the depleted mixture of hydrogen and nitrogen to obtain the liquid ammonia for said second isotope exchange; and

evaporating one part of the synthesized liquid ammonia and recycling said part to said first isotope exchange.

4,564,516
AMMONIA-BASED CATALYST FOR WATER-GAS SHIFT REACTION

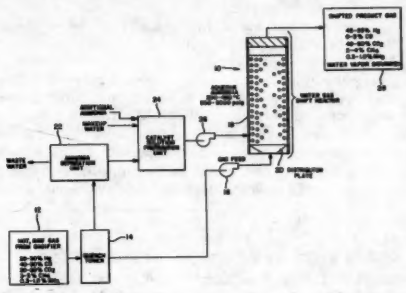
Douglas C. Elliott, Richland; L. John Sealock, Jr., West Richland, and Richard T. Hallen, Richland, all of Wash., assignors to Gas Research Institute, Chicago, Ill.

Filed Jul. 5, 1983, Ser. No. 510,90[illegible]

Int. Cl.⁴ C01B *3/16*

U.S. Cl. 423—655 **13 Claims**

1. A process for shifting an incoming gas stream containing carbon monoxide to an outgoing gas stream enriched in hydrogen using the water-gas shift reaction which comprises carrying out the reaction in the presence of an aqueous solution containing a catalytically effective amount of a catalyst that consists essentially of a material selected from the group consisting of ammonia, ammonia yielding compounds, and mixtures thereof.



4,564,517
METHOD FOR EVALUATING PARAMETERS RELATED TO THE THERAPEUTIC AND/OR PROPHYLACTIC TREATMENT OF SOLID NEOPLASMS IN HUMANS

Herman H. Fudenberg, P.O. Box 118, Isle of Palms, S.C. 29451, and Kwong Y. Tsang, P.O. Box 264, Mount Pleasant, S.C. 29464

Filed Feb. 22, 1984, Ser. No. 582,452

Int. Cl.⁴ A61K *49/00*; C01N *33/48*

U.S. Cl. 424—9 **13 Claims**

1. A method for evaluating parameters related to treatment and/or prophylaxis of solid tumors in human subjects, comprising:

(a) inoculating a non-human animal subject in utero with a preparation consisting essentially of plasma membrane derived from cells of a given human solid tumor and free of cytoplasmic proteins to induce antigen specific tolerance;

(b) after birth of said non-human animal subject, inoculating said animal with a preparation comprising cells obtained from said given human solid tumor so as to induce in said animal subject said given human solid tumor; and

(c) utilizing said animal subject as a host for evaluating the effects of one or more therapeutic and/or prophylactic measures on said given human solid tumor.

7. A method for evaluating parameters related to treatment and/or prophylaxis of osteosarcoma tumors in human subjects, comprising

(a) inoculating a non-human animal subject in utero with a preparation consisting essentially of plasma membrane derived from human osteosarcoma cells and free of cytoplasmic proteins;

(b) after birth of said non-human animal subject, inoculating said animal with a preparation comprising human osteosarcoma cells so as to induce in said animal subject an osteosarcoma tumor; and

(c) utilizing said animal subject as a host for evaluating the effects of one or more therapeutic and/or prophylactic measures on human osteosarcoma tumor.

4,564,518
OPHTHAMOLOGICAL METHOD FOR TESTING TEAR FLOW AND COMPOSITION FOR USE IN SAME

Joseph G. Rosenbaum, 23511 Chagrin Blvd., Beachwood, Ohio 44122

Filed Apr. 26, 1984, Ser. No. 603,929

Int. Cl.⁴ A61K *49/00*

U.S. Cl. 424—9 **13 Claims**

1. A method for ophthamological patency testing, comprising the steps of

(a) applying a substantially isotonic liquid suspension of minute light reflective solid particles to the eye,
(b) permitting said suspension to form a meniscus at the margin of the eyelids, and
(c) observing the rate of flow of said particles in said meniscus toward the punctal orifices.

5. A composition for application to the eye in an ophthamological patency test, comprising a substantially isotonic liquid carrier which is substantially non-irritating to the eye, and a quantity of highly visible, minute, discrete, light reflective particles in said liquid carrier, said particles having a specific gravity of a value in relation to the specific gravity and viscosity of the liquid carrier, which will permit said particles to be suspended in and travel with the flow of said liquid carrier.

4,564,519

DI-ENZYMATIC CHEWABLE DENTIFRICE

Michael A. Pellico, Los Angeles, and Robert E. Montgomery, Pacific Palisades, both of Calif., assignors to Laclede Professional Products, Inc., Gardena, Calif.

Continuation-in-part of Ser. No. 501,383, Jun. 6, 1983, Pat. No. 4,537,764, which is a continuation-in-part of Ser. No. 292,633, Aug. 13, 1981. This application Dec. 8, 1983, Ser. No. 559,474
The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.
Int. Cl.[4] A61K *9/68, 7/28, 37/50*
U.S. Cl. 424—48 **18 Claims**

1. A di-enzymatic chewable dentifrice containing, per gram of dentifrice, from about 0.015 to about 0.6 millimole of oxidizable substrate and from about 0.5 to about 500 International Units of an oxidoreductase enzyme specific to such substrate for producing hydrogen peroxide upon oral chewing of said dentifrice and further containing from about 0.0001 to about 0.01 millimole of a thiocyanate salt and from about 0.01 to about 50 International Units of lactoperoxidase for interacting with hydrogen peroxide to produce a hypothiocyanate bacterial inhibitor, wherein the concentration of lactoperoxidase in International Units is at least about 2% of the concentration of the oxidoreductase enzyme in International Units to thereby limit the ratio of hydrogen peroxide to lactoperoxidase during oral chewing of the dentifrice.

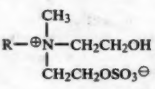
4,564,520

HAIR SHAMPOOS AND BODY CLEANSING AGENTS HAVING A CONTENT OF ALKYLSULFATOBETAINES

Winfried Ehrl, Neuötting; Alwin Reng, Kelkheim, and Jochen M. Quack, Eppstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 24, 1982, Ser. No. 423,271
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138770
Int. Cl.[4] A61K *7/06;* **C11D** *1/18;* **C07C** *143/00*
U.S. Cl. 424—70 **4 Claims**

1. Surfactant-containing hair shampoo and body cleansing agent the surfactant component of which consists essentially of an alkylsulfatobetaine of the formula



wherein R is coconut fatty alkyl.

4,564,521

MEDICATION FOR PAIN RELIEF IN JOINTS OF HUMANS

James Altadonna, 90 E. 2nd St., Deer Park, N.Y. 11729

Filed Mar. 21, 1984, Ser. No. 591,933
Int. Cl.[4] A61K *33/18*
U.S. Cl. 424—150 **4 Claims**

1. A method of treating pains in joints in humans which comprises the topical application to the skin over an effected joint for absorption by the joint of a solution comprising:
(a) iodine in the proportion of 1 to 5 grams of iodine to 1 liter of solution;
(b) sodium iodine in the proportion of 1 to 10 grams of sodium iodine to 1 liter of solution;
(c) ethanol alcohol in the amount of 400 milliliters
(d) oil of lemon in the amount of 2 milliliters; and
(e) water in the amount to obtain 1 liter of solution.

4,564,522

PHARMACEUTICAL PREPARATIONS AND COMPOSITIONS

Dennis Rocke, London, England, assignor to Shelleden Products Limited, London, England

PCT No. PCT/GB82/00331, § 371 Date Jul. 20, 1983, § 102(e) Date Jul. 20, 1983, PCT Pub. No. WO83/01898, PCT Pub. Date Jun. 9, 1983
PCT Filed Nov. 23, 1982, Ser. No. 525,048
Claims priority, application United Kingdom, Nov. 24, 1981, 8135311
Int. Cl.[4] A61K *35/78, 31/355, 31/07*
U.S. Cl. 424—195.1 **16 Claims**

1. A pharmaceutical composition characterised in that it comprises
(a) Vitamin A,
(b) at least one tochopherol
(c) an oil of the genus prunus, and
(d) an oil of the genus sesamum
in that the weight of each of (c) and (d) is between 5 and 75 times the weight of (a); in that the weight of each of (c) and (d) is between 4 and 125 times the weight of (b); and in that the composition has a consistency suitable for topical application.

4,564,523

FUNCTIONAL PROTEIN PRODUCTS

Lucas K. Shay, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 518,593, Jul. 29, 1983, Pat. No. 4,536,407. This application Mar. 18, 1985, Ser. No. 713,506
Int. Cl.[4] A23D *5/00;* **A23J** *3/00;* **A23L** *1/27*
U.S. Cl. 426—60 **39 Claims**

1. A process of preparing a functional protein product which comprises the steps:
(a) culturing a yeast under aqueous aerobic fermentation conditions to produce a crude aqueous fermentation effluent containing nucleic acid-containing yeast cells,
(b) adjusting the pH of said crude aqueous fermentation effluent with alkali metal or ammonium hydroxide to about 9 to 11,
(c) adjusting the cellular concentration to an aqueous cream of about 10 to 25 weight percent cells,
wherein said steps (b) and (c) can be reversed,
(d) heat-shocking said pH-adjusted cream under heat-shock conditions at a temperature of about 110° C. to 160° C. for a time of about 40 to 200 seconds, thereby reducing the nucleic acids of said cells and increasing the nucleic acids in the aqueous phase of the heat-shocked cream,
(e) separating said heat-shocked cream to produce a stream of heat-shocked nucleic acid-reduced microbial yeast cells as a first functional protein product, and an aqueous liquor stream containing proteinaceous materials and nucleic acids as a second functional protein product.

4,564,524

FODDER AND PROCESS FOR PRODUCTION THEREOF

Asko Haarasilta, Helsinki, Finland, assignor to Vaasanmylly Oy, Helsinki, Finland

Filed May 18, 1983, Ser. No. 495,683
Int. Cl.[4] A23K *1/00*
U.S. Cl. 426—74 4 Claims

1. A process for producing a coarse ruminant feedstuff having a stabilized granular consistency, said process comprising:

a. preparing a feed composition comprising one or more cellulose-containing materials selected from the group consisting of straw, sawdust and wood chips in an amount of from 50 to 92% by weight and from 4 to 10% by weight of polymerizable colophonium for stabilizing the granular consistency of said feedstuff under rumen conditions to thereby mechanically stimulate rumination;

b. extruding said feed composition under pressure to thereby polymerize said polymerizable colophonium and granulate said feed composition into a coarse ruminant feedstuff having a stabilized granular consistency.

4,564,525

CONFECTION PRODUCTS

Cheryl R. Mitchell; Pat R. Mitchell, both of 446 N. Powers, Manteca, Calif. 95336, and William A. Mitchell, 175 Jacksonville Rd., Lincoln Park, N.J. 07035

Filed Mar. 30, 1984, Ser. No. 595,280
Int. Cl.[4] A23G *1/00, 3/00*
U.S. Cl. 426—104 31 Claims

1. A confection product comprising about 2–50% by weight powdered roasted dahlia tuber syrup, about 0–60% by weight sweetener and about 20–60% by weight confectioner fat.

4,564,526

METHOD FOR MANUFACTURING PROCESSED FOODSTUFFS FROM ALGAE AS MATERIALS

Shuji Takashima, Numazu, Japan, assignor to Kabushiki Kaisha Yamagataya Nori Ten, Tokyo, Japan

Filed Sep. 14, 1983, Ser. No. 532,183
Claims priority, application Japan, Sep. 22, 1982, 57-165871
Int. Cl.[4] A23D *5/02;* A23L *1/06, 1/24, 1/337*
U.S. Cl. 426—262 4 Claims

1. A method for the manufacture of processed food which comprises heating an algae selected form the group consisting of single-petaled weed, stripe green laver, *Ulopteryx pinnatifida,* sea tangle, sea moss, and mixtures thereof in an aqueous medium containing at least one metal selected from the group consisting of copper, zinc and cobalt at a temperature and for a sufficient time to replace at least a portion of the magnesium in the chlorophyll with the selected metal thereby to effect fixation of the green color and then mixing selected food materials with resulting algae to produce said processed foodstuff.

4,564,527

ACIDIFIED VEGETABLES FOR PASTRIES

Richard B. Bucsko, Seattle, Wash., and Paul E. Holland, Rancho Polos Verdes, Calif., assignors to Carlin Foods Corporation, Chicago, Ill.

Continuation of Ser. No. 374,025, May 3, 1982, abandoned. This application Dec. 3, 1984, Ser. No. 677,198
Int. Cl.[4] A21D *10/04;* A23L *3/34*
U.S. Cl. 426—335 8 Claims

1. A method for preparation of batter comprising the steps of:

(a) placing substantially unbuffered vegetables, a sweetener, a preservative amount of preservative and an edible acid in a vessel;

(b) heating said vegetables, sweetener, preservative and edible acid in said vessel to a temperature of about 170 degrees F. and maintaining said temperature of about 170 degrees F. for approximately 5 minutes;

(c) agitating said vegetables, sweetener, preservative and edible acid in said vessel until a substantially homogenous pourable preparation of acidified vegetables is formed; and

(d) adding said preparation of acidified vegetables to an acid-balanced, chemically-leavened baking mix.

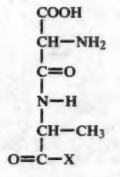
4,564,528

AMINOMALONYL ALANINE COMPOUNDS AND USE AS DIETARY SWEETENERS

Herbert H. Seltzman, Raleigh, and Yung-Ao Hsieh, Durham, both of N.C., assignors to Research Triangle Institute, Research Triangle Park, N.C.

Filed Sep. 18, 1984, Ser. No. 651,859
Int. Cl.[4] A23L *1/236, 2/38*
U.S. Cl. 426—548 7 Claims

1. Aminomalonyl-D-alanine derivatives having the formula:



and pharmaceutically acceptable salts thereof, wherein X is —OR with R being alkyl of from 3 to 10 carbon atoms.

4,564,529

DRY MIX FOR WHIPPED TOPPINGS

Francis L. Watson, Ocean Gate; Stevan A. Angalet, Jackson, and Richard A. Carlson, Freehold, all of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Apr. 18, 1983, Ser. No. 485,777
Int. Cl.[4] A23G *3/00;* A23L *1/22, 1/19*
U.S. Cl. 426—570 10 Claims

1. A dry mix which is able to be combined with cold water or milk and whipped into a stable, foamed topping comprising a dry blend of (1) an encapsulated, spray dried fat component and (2) a hydrocolloid stabilizer comprising unhydrated hydroxypropyl cellulose, and wherein the encapsulated fat component includes fat, carbohydrate encapsulating agents, proteinaceous encapsulating agents and emulsifying agents.

4,564,530

PROCESS FOR THE PRODUCTION OF SOYA JELLY AND PRODUCT RESULTING THEREFROM

Alison Hugelshofer, Konolfingen, Switzerland, assignor to Nestec S. A., Vevey, Switzerland

Filed Aug. 23, 1984, Ser. No. 643,683
Int. Cl.[4] A23L *1/064*
U.S. Cl. 426—575 5 Claims

1. A process for the production of a soya jelly in a hermetically sealed pack comprising the steps of preparing an aqueous suspension containing 3–10% by weight of whole or defatted soya solids, 0.2–0.7% by weight of agar-agar and 0–12% by weight of sucrose, sterilizing by heating the suspension thus prepared and then precooling it to 40°–48° C., aseptically packing it in hermetically sealed containers at 40°–48° C. and allowing it to set by cooling in the containers.

4,564,531

PROCESS FOR PRODUCTION OF PROCESSED SWEET CORN

Tadashi Ohgami; Zenjiro Naitoh, both of Yokohama; Haruo Saotome; Kenji Takekoshi, both of Kawasaki, and Kimio Saitoh, Atsugi, all of Japan, assignors to Knorr Shokuhin Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 571,522, Jan. 17, 1984, abandoned. This application Jul. 15, 1985, Ser. No. 755,537

Int. Cl.[4] A23L *1/212, 1/40*

U.S. Cl. 426—589 **11 Claims**

1. A process for enhancing the flavor of sweet corn, consisting essentially of:

(a) converting sweet corn kernels into a paste;

(b) contacting said sweet corn paste with about 1 to 15% by weight of at least one reducing sugar selected from the group consisting of dextrose, fructose and maltose; and about 0.1 to 0.8% of at least one amino acid selected from the group consisting of glutamic acid, aspartic acid, glycine, proline and alanine; and

(c) heating the mixture of sweet corn paste-reducing sugar-amino acid to a temperature of about 80° to 100° C. for about 10 to 30 minutes thereby causing a reaction between the reducing sugar and amino acid to occur, resulting in an enhancement of the sweet corn flavor.

4,564,532

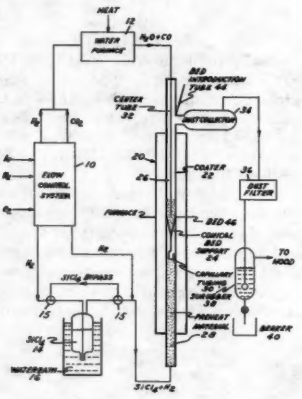
GLASS-SURFACE MICROCARRIER FOR ANCHORAGE-DEPENDENT CELL CULTIVATION

Timothy M. Henderson, Ann Arbor, Mich., assignor to KMS Fusion, Inc., Ann Arbor, Mich.

Filed Jan. 7, 1985, Ser. No. 689,488

Int. Cl.[4] A01N *1/02;* **B05D** *3/06;* **C12N** *11/14, 5/02*

U.S. Cl. 427—2 **7 Claims**



1. A chemical vapor deposition process for manufacture of microcarriers for anchorage-dependent cell cultivation in a culture medium so as to possess a predetermined microcarrier density in the range of 1.01 to 1.2 g/cc, said process comprising the steps of:

(a) selecting a multiplicity of spherical precursor substrates having densities equal to or less than said predetermined density,

(b) positioning said spherical precursor substrates in a fluidized bed within a reaction chamber,

(c) feeding reaction gasses separately into said bed under conditions for promoting chemical reaction of said gasses and deposition of silicate glass as a surface coating onto said precursor substrates and for a time sufficient to raise the densities of the coated substrates to said predetermined density within the range of 1.01 to 1.2 g/cc, and then

(d) removing the coated substrates from said reaction chamber.

4,564,533

METHOD FOR DEPOSITING SILICON CARBIDE NON-SINGLE CRYSTAL SEMICONDUCTOR FILMS

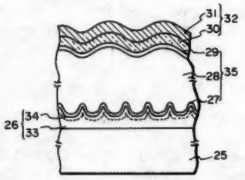
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1985, Ser. No. 693,296

Claims priority, application Japan, Jan. 23, 1984, 59-9865

Int. Cl.[4] B05D *3/06*

U.S. Cl. 427—39 **13 Claims**



1. A method of forming a silicon carbide non-single crystal semiconductor, characterized in that said method comprises the step of:

applying electric or light energy to a methylsilane expressed by the formula of $SiH_{4-n}(CH_3)_n$ (where n=1 to 3) or $Si_2(CH_3)_nH_{6-n}$ (where n=1 to 5) and a silane hydride (of Si_mH_{2m+2}, where m=1 to 3);

thereby forming a silicon carbide non-singe crystal semiconductor layer containing Si_xC_{1-x} (where $0<x<1$) as a major component thereof.

4,564,534

HEAT-SENSITIVE TRANSFER MATERIAL AND HEAT-SENSITIVE TRANSFER RECORDING METHOD

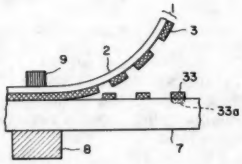
Naoki Kushida, Yokohama, and Tomoko Kusumoto, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1984, Ser. No. 631,646

Claims priority, application Japan, Jul. 23, 1983, 58-133586; Jul. 23, 1983, 58-133587; Jul. 23, 1983, 58-133588; Jul. 23, 1983, 58-133589

Int. Cl.[4] B41M *5/26*

U.S. Cl. 427—256 **12 Claims**



10. A heat-sensitive transfer recording method, which comprises:

providing a heat-sensitive transfer material and a heat-transferable ink layer formed on a support, the heat-transferable ink layer comprising a heat-fusible binder, microcapsules dispersed in a heat-fusible binder and enclosing a colorant and an oil agent which is liquid or semi-solid at room temperature, and a foaming agent dispersed in the heat-fusible binder,

superposing the heat-sensitive transfer material on a record-

ing medium with its heat-transferable layer facing the recording medium, and

heating the heat-transferable layer of the heat-sensitive transfer material in a desired pattern to leave the image of the heat-transferable ink corresponding to the desired pattern on the recording medium after separation of the recording medium and the heat-sensitive transfer material.

4,564,535

PRODUCT AND PROCESS FOR SCENTING PACKAGING MATERIALS

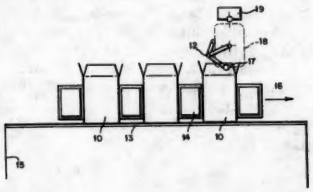
Theodor Altenschöpfer, Düsseldorf; Walter Giesen, Haan; Klaus Schumann, Erkrath, and Benno Streschnak, Krefeld, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jan. 19, 1983, Ser. No. 459,135

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1982, 3201941

Int. Cl.⁴ A61K *7/46;* **C11B** *9/00;* **B05D** *5/00, 3/12*

U.S. Cl. 427—285 **12 Claims**



1. A process for scenting a packaging container comprising applying to a section of the packaging container a scented paste comprising a perfume and a thickening quantity of a gelling agent wherein the paste has thixotropic properties.

4,564,536

AUTODEPOSITION COATING WITH REDUCED CLEANER EXUDATE

Bashir M. Ahmed, Ambler, Pa., assignor to Amchem Products Inc., Ambler, Pa.

Filed Mar. 11, 1985, Ser. No. 710,187

Int. Cl.⁴ B05D *1/18, 3/10, 7/14*

U.S. Cl. 427—327 **14 Claims**

1. In an autodeposition coating process of the type wherein a metal workpiece is first cleaned with cleaning chemicals in a cleaning stage, optionally subjected to a pickling stage, immersed in autodeposition chemicals to form an autodeposited coating in a coating stage, and then heated to cure the autodeposited coating in a curing stage, with water rinses between said stages, the improvement comprising maintaining the temperature of the workpiece sufficiently constant during the cleaning stage, optional pickling stage, and their respective water rinses, to substantially prevent expansion or contraction of the metal of the workpiece, so that bleed-out of the cleansing and/or pickling chemicals onto the cured coating is substantially eliminated.

4,564,537

PROCESS FOR DEPOSITING A SILICA COATING ON A METAL SURFACE

Frederick D. Austin, Weybridge, and Peter Watson, Epsom, both of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Jan. 18, 1985, Ser. No. 692,706

Claims priority, application United Kingdom, Jan. 21, 1984, 8401636

Int. Cl.⁴ B05D *3/02*

U.S. Cl. 427—376.4 **10 Claims**

1. The process for depositing a silica coating on a metal surface comprises

(1) a mixing step of mixing finely divided moist silicic acid having a particle size distribution such that not more than 10% by weight has a particle size in excess of 3 millimeters with hot pure water over a period of not more than 1 hour,

(2) a depolymerisation step of heating the mixture at a temperature above 95° C., and a pH of 4–6, quantity of moist silicic acid, and the duration of the heating step being so chosen that at the end of the depolymerisation step substantially all the silica is depolymerised to active silica and, after the depolymerisation step,

(3) a coating step of passing the aqueous silica over the metal surface to be coated while maintaining the solution at a temperature above 80° C. for a time sufficient to deposit the desired thickness of a hard bound silica coating but not sufficient to cause formation of a substantial amount of loosely bound gel.

4,564,538

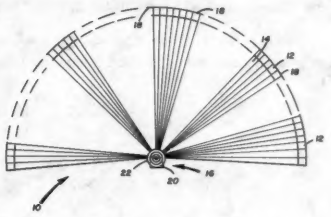
FIREPLACE FAN

Martin P. Scholtz, 22 W. 25th St., Baltimore, Md. 21218

Filed Aug. 13, 1984, Ser. No. 640,445

Int. Cl.⁴ A45B *27/00*

U.S. Cl. 428—12 **20 Claims**



1. A method of manufacturing a decorative object, the steps comprising:

layering first and second papers;

aligning the first and second papers relative to one another;

temporarily joining with a joining means the first and second papers to each other;

reinforcing the layered first and second papers along at least one common edge thereof;

pleating the layered first and second papers;

removing the joining means;

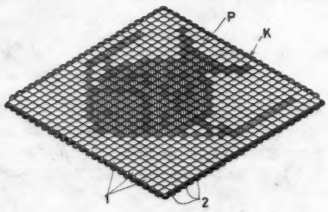
gathering and securing one end of the pleated first and second papers, and

mounted a decorative member to the gathered and secured end of the first and second papers.

4,564,539
METAL MESH NETWORK

Tadashi Tsuji, Kyoto, Japan, assignor to Kabushiki Kaisha Tsuji, Kyoto, Japan

Filed May 25, 1984, Ser. No. 614,463
Int. Cl.[4] F16B *2/00*
U.S. Cl. 428—33 **11 Claims**



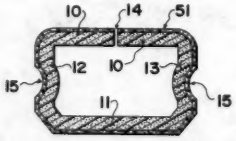
1. A metal mesh network comprising plural unit piece members made by shearing, punching and bending a metal sheet, each of which having plural pawls, and plural joint ring members made by punching said metal sheet, wherein:

said unit piece members are disposed adjacent to each other on a plane, and said plural pawls of said unit piece members, adjacent and facing with each other, are loosely fitted in each joint ring member and are bent outward opposite to each other so that said unit piece members are engaged with said joint ring members in a cloth-like form, said metal mesh network being characterized in that a metal sheet is first coated with thermosetting resin paint selected from epoxy type, urethane type and thermosetting acrylic type resin paints, then sheared, punched and bent to make said unit piece members and joint ring members so that said unit piece members and joint ring members are entirely coated with said resin paint.

4,564,540
PULTRUDED FIBREGLASS SPACER FOR SEALED WINDOW UNITS

Lawrence W. Davies, 139 Brentford Rd., Winnipeg, Manitoba, Canada (R2M 4M3); Jeff Martin, Hudson; Joseph E. Sumerak, both of 207 N. Hayden Pkwy., Hudson, Ohio 44236, and Kenneth Church, Box 1186, Gimli, Manitoba, Canada R0C 1B0

Filed Jul. 11, 1983, Ser. No. 512,469
Claims priority, application United Kingdom, Dec. 8, 1982, 8234951
Int. Cl.[4] E06B *3/66*
U.S. Cl. 428—34 **19 Claims**



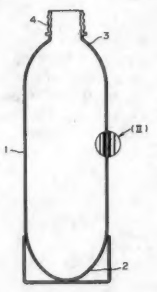
1. A spacer for a sealed window unit comprising an elongate hollow body of substantially rectangular cross-section defining two transverse faces dimensioned such that the transverse faces have a width sufficient to space two panes of glass in the sealed window unit, one of the transverse faces being apertured by the provision of a slot along the full length thereof having a slot width as as to allow the ingress of moisture into the hollow body while preventing the escape through the slot of a granular dessicant from the hollow body, wherein the hollow body is formed by pultrusion from a thermosetting material reinforced by a proportion of elongate continuous glass fiber material oriented longitudinally throughout the length of said body so as to provide for the body a coefficient of thermal expansion substantially equal to that of glass.

18. A sealed window unit comprising two panes of glass arranged in spaced parallel relationship, and four spacers each arranged between the panes along two adjacent edges of the panes and each comprising an elongate hollow body of substantially rectangular cross-section defining two transverse faces dimensioned such that the transverse faces have a width sufficient to contact the panes in the spaced parallel relationship, a granular dessicant within the hollow body, the transverse face of the hollow body extending inwardly of the panes being apertured by the provision of a slot along the full length thereof having a slot width so as to allow the ingress of moisture into the hollow body to the dessicant while preventing the escape through the slot of the granular dessicant from the hollow body, the hollow body being formed by pultrusion from thermosetting material reinforced by a porportion of elongate continuous glass fiber material oriented longitudinally throughout the length of said body so as to provide for the body a coefficient of thermal expansion substantially equal to that of the glass panes.

4,564,541
PLASTIC LAMINATE STRUCTURE AND VESSEL

Kazuo Taira, Tokyo; Akira Sakamoto, Yokohama; Muneki Yamada, Fujisawa; Masanori Aizawa, Yokohama, and Hiroshi Ueno, Yokosuka, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Feb. 7, 1984, Ser. No. 577,823
Claims priority, application Japan, Feb. 8, 1983, 58-18041; Nov. 15, 1983, 58-213334
Int. Cl.[4] B65D *1/00*; B32B *27/08, 27/36*
U.S. Cl. 428—35 **23 Claims**



1. A laminate structure comprising (1) a layer of a creep-resistant resin composed of ester recurring units selected from the group consisting of polyethylene terephthalate, polybutylene terephthalate, polycarbonate and polyarylate and (2) a gas barrier layer containing an olefin-vinyl alcohol copolymer, said layers (1) and (2) being laminated through (3) a thermoplastic resin adhesive layer, wherein the adhesive resin is composed of a copolyester or copolyester composition comprising in the main chain at least two acid components selected from (i) an isophthalic acid component, (ii) a terephthalic acid component and (iii) a linear or cyclic aliphatic dibasic acid component, and at least one glycol component selected from the group consisting of ethylene glycol, propylene glycol, 1,4-butane diol, neopentyl glycol, cyclohexane diol, xylene glycol and hexahydroxylene glycol, said copolyester having a glass transition temperature (Tg) of −40° to 75° C.

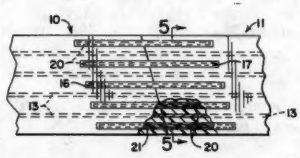
2. A sealing and packaging multi-layer plastic vessel formed of a laminate structure as set forth in claim 1.

4,564,542

BELT AND METHOD OF SPLICING THE SAME

Winthrop S. Worcester, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Mar. 20, 1985, Ser. No. 714,143
Int. Cl.[4] B32B *3/00, 31/08, 31/12*
U.S. Cl. 428—58 9 Claims



1. In a longitudinal extending endless reinforced belt having a first end belt section and a second end belt section, said end sections being cemented together across their abutting faces to define a splice line, said belt having a body proper with parallel reinforcing cords extending therethrough, said cords extending in the longitudinal direction of the belt for the entire length of such belt and terminating at said splice line, said endless reinforced belt having strands embedded therein and extending across said splice line into both of said end belt sections, said strands spaced laterally from said cords in said end belt sections, and said strands being cemented to the body proper of said end belt sections.

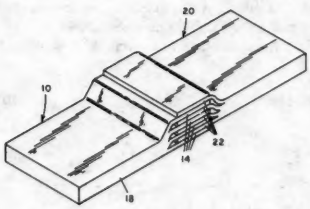
5. The method of splicing the respective end belt sections of a polyurethane belt having parallel reinforcing cords therein to form an endless belt comprising the steps of shearing the respective belt ends to form a linear face on each section, cutting narrow slots that are laterally spaced from said reinforcing cords in each of said end sections and with said slot in said sections being in alignment; cementing said faces of said end sections, and cementing cords into said aligned slots to form an integral endless conveyor belt.

4,564,543

MULTIPLE LAP-JOINT FOR THERMOPLASTIC LAMINATES

James D. Ritter, Wichita, Kans., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 567,773, Jan. 3, 1984, Pat. No. 4,496,412.
This application Sep. 13, 1984, Ser. No. 650,261
Int. Cl.[4] B32B *3/00;* B31F *5/00*
U.S. Cl. 428—58 1 Claim



1. A multiple lap-joint formed between the edges of two sheets of thermoplastic ply laminates, the joint comprising:

feathered edges of one sheet interleaved with feathered edges of the other sheet, the interleaved edges heated under pressure and bonded together forming an integral multiple lap-joint between the sheets.

4,564,544

FIRE-RESISTANT GYPSUM BOARD

Edward A. Burkard, East Amherst, and James J. Segada, North Tonawanda, both of N.Y., assignors to National Gypsum Company, Dallas, Tex.

Filed Dec. 1, 1983, Ser. No. 556,969
Int. Cl.[4] B32B *1/04, 5/18, 13/04, 31/00*
U.S. Cl. 428—70 2 Claims

1. A gypsum wallboard comprising a set gypsum core and two opposed paper faces, said core comprising, as a major portion, set gypsum, and in minor portions muscovite and short glass fibers, said muscovite being substantially free of feldspar wherein substantially all of said muscovite will pass a 60 mesh screen, said core further comprising minor portions of a set accelerator, starch and foaming agent.

4,564,545

LIGHT-POLARIZING PLATE HAVING EXCELLENT DURABILITY AND PRODUCTION OF THE SAME

Takuzo Okumura, Osaka; Masataka Yanase, Tokyo, and Hitoshi Kikui, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 29, 1984, Ser. No. 584,908
Claims priority, application Japan, Mar. 1, 1983, 58-034236
Int. Cl.[4] B32B *15/08, 27/30*
U.S. Cl. 428—76 2 Claims

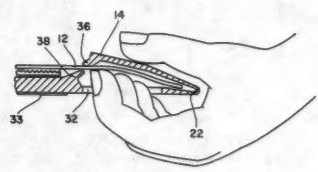
1. A light-polarizing plate comprising a light polarizing film covered with a high polymer film protector, wherein said light polarizing film is made of uniaxially stretched polyvinyl alcohol or its derivative and has a moisture content of not more than 5% and said highpolymer film protector is made of high density polyethylene or polypropylene and is prepared by uniaxially stretching by means of pressure rolls and has an average light transmission in the visible region of not less than 30%, the water vapor transmission of the protector film being not more than 10 g/m^2 day.

4,564,546

EASILY RELEASABLE MAT HOLDER

W. Gregory Jones, Woodstock, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 24, 1984, Ser. No. 685,436
Int. Cl.[4] B32B *3/02;* A47L *23/22*
U.S. Cl. 428—81 6 Claims



1. Holder for a floor mat or the like comprising,

(a) a self-supporting frame having a base and four sides generally forming a rectangle and adapted to support a mat or other flat, flexible structure,

(b) flap means adjacent at least one side of said rectangle and hingedly connected to said sides so as to open to admit said flat structure and close over the corresponding edge of said structure to maintain it in position,

(c) means associated with said flap and said base to hold said flap in the closed position; and

(d) at least one aperture in said base position so as to be covered by said flap and of a size adapted to permit hand pressure to be applied through said aperture against said flap or against said flat structure sufficient to overcome said holding means and open said flap.

4,564,547

HANDLEABLE SHAPES OF THERMAL INSULATION MATERIAL

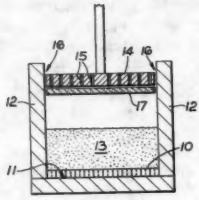
John T. Hughes, Worcester, United Kingdom, assignor to Micropore International Limited, Worchestershire, England

Filed Aug. 3, 1984, Ser. No. 638,113

Claims priority, application United Kingdom, Aug. 4, 1983, 8321104; Oct. 8, 1983, 8326977; Jan. 11, 1984, 8400701

Int. Cl.[4] B32B *3/12*

U.S. Cl. 428—117 14 Claims



1. A thermal insulation body comprising:

a reinforcing honeycomb structure; and

a finely divided thermal insulation material comprising a microporous insulation material selected from the group consisting of silica aerogel and pyrogenic silica, the finely divided thermal insulation material being compacted into the cells of the honeycomb structure such that residual pressure in the insulation material acts against the walls of the honeycomb structure so as to hold the walls of the honeycomb structure firmly in position.

4,564,548

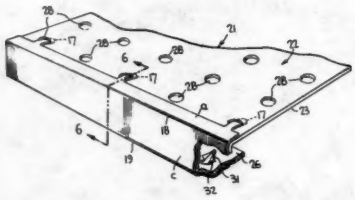
COVER STRIP FOR DISPLAY SHELF

Jacob Fast, 6850 NW. 12th Ave., Ft. Lauderdale, Fla. 33309

Filed Nov. 21, 1984, Ser. No. 673,739

Int. Cl.[4] E04F *13/00*

U.S. Cl. 428—121 14 Claims



1. A cover strip for a front surface of a shelf wherein the shelf has a generally horizontally extending support member with an upper support surface for supporting merchandise items for display and an undersurface, a front surface member, generally vertically-oriented and having a predetermined vertical height with an upper corner at its junction with the support member and a spaced lower corner, the front surface member having a horizontal width which is very much greater than its height, said cover strip comprising:

an integral sheet of flexible plastic material having a generally rectangular configuration with a width very much greater than its height and having at least a first fold line defined therein extending widthwise across the entire width of said sheet and dividing said sheet into an upper section and a lower section, said strip further comprising a first widthwise extending edge at the upper terminus of said upper section and a second widthwise extending edge at the lower terminus of said lower section, said upper section, when said sheet is folded along said first fold line, resting on the support surface of the shelf, means for securing said upper section to the support surface of the shelf, and means for securing said lower section to the shelf to cover at least the upper corner and a major portion of the front surface member of the shelf with said cover strip.

4,564,549

MAGNETIC RECORDING MEDIA AND PROCESS FOR FABRICATING THE SAME

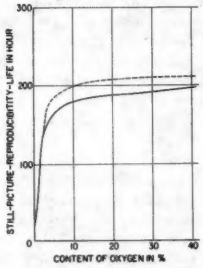
Takashi Suzuki, Osaka; Koichi Shinohara, Hyogo; Masaru Odagiri, Hyogo, and Takashi Fujita, Hyogo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 575,480, Jan. 30, 1984, abandoned, which is a continuation of Ser. No. 293,147, Aug. 17, 1981, abandoned. This application Oct. 3, 1984, Ser. No. 657,056

Claims priority, application Japan, Aug. 18, 1980, 55-113898; Aug. 18, 1980, 55-113904

Int. Cl.[4] B32B *3/00;* G11B *5/70*

U.S. Cl. 428—141 5 Claims



1. A magnetic recording medium characterized in that a thin film of ferromagnetic metal containing oxygen is formed over the surface of an elongated polyester film which is coated with worm-like or particle-like projections comprising a cured high-molecular weight compound having a surface roughness, R_{max}, of 0.003 to 0.1 micrometers and wherein the back surface of said film also has worm-like or particle-like projections comprising a cured high-molecular weight compound and is further formed with a thin film of a high-molecular weight compound containing a lubricant.

4,564,550

FOAM SEALING TAPE

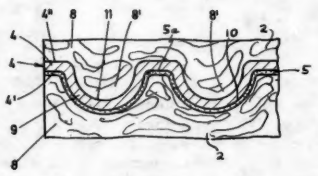
Rolf Tschudin-Mahrer, Lausen, Switzerland, assignor to Irbit Research & Consulting A.G., Fribourg, Switzerland

Filed Feb. 28, 1985, Ser. No. 704,390

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1984, 3407995

Int. Cl.[4] B32B *1/08, 7/06;* A61L *15/00*

U.S. Cl. 428—159 10 Claims



1. A foam sealing tape comprising

a foam sealing tape layer and an interlayer strip rolled up together in a compressed form,

at least one wide-side surface of the interlayer strip has elevations which press into the foam sealing tape layer.

4,564,551

WET-PRESSING BELT FOR PAPER MACHINES

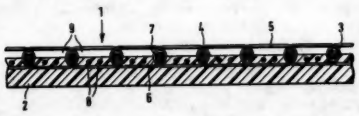
Walter Best, Duren, Fed. Rep. of Germany, assignor to Thomas Josef Heimbach GmbH & Co., Duren, Fed. Rep. of Germany

Filed Jan. 16, 1984, Ser. No. 572,888

Claims priority, application European Pat. Off., Jun. 28, 1983, 106268.2

Int. Cl.⁴ D03D *13/00*

U.S. Cl. 428—222 **20 Claims**



1. A paper machine dehydration belt, comprising:

(a) a liquid impermeable belt stratum;

(b) a plurality of consecutively arrayed water drainage channels disposed along a first face of said stratum for draining water away therefrom;

(c) each of said channels defined by a plurality of adjacently disposed filamentary loops and each of said loops having a portion thereof disposed in said stratum and a portion extending beyond said first face;

(d) each of said loops comprised generally of substantially straight first and second legs and end portions connecting the legs; and,

(e) each loop of a channel having an end portion disposed between and pivotally connected by means with the end portions of the adjacent loops of the adjacent channels so that the loops of said channels are successively disposed with clockwise and counterclockwise pitches.

4,564,552

GAS PERMEABLE, WATER AND OIL RESISTANT COMPOSITE STRUCTURE

Joseph G. Adiletta, Thompson, Conn., assignor to Pall Corporation, Glen Cove, N.Y.

Continuation-in-part of Ser. No. 566,404, Dec. 28, 1983, Pat. No. 4,508,775, which is a continuation-in-part of Ser. No. 542,026, Oct. 14, 1983, abandoned. This application Oct. 5, 1984, Ser. No. 658,664

Int. Cl.⁴ B32B *7/00*

U.S. Cl. 428—246 **16 Claims**

1. A water and oil resistant, microporous article of footwear comprising:

(1) an outer layer of fabric;

(2) an intermediate layer comprising

(a) from about 60 to about 40 parts by weight of inorganic, reinforcing microfibers,

(b) from about 40 to about 60 parts by weight of a polymeric binding agent in the form of a continuous matrix, said binding agent being derived from an emulsion or latex of particles of said binding agent having a size of less than one micrometer in a liquid, said binding agent and said microfibers being present in the intermediate layer in a total amount of 100 parts by weight, based on the weight of said binding agent and said microfibers, and

(c) a treating agent present in an amount sufficient to render the intermediate layer both hydrophobic and oleophobic; and

(3) an inner layer of fabric.

4,564,553

MANUFACTURED ARTICLES, INCLUDING FABRICS COMPRISING THERMALLY BONDED POLYOLEFINIC FIBERS

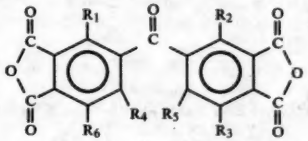
Antonio Pellegrini, Milan, and Benito Beghelli, Monza, both of Italy, assignors to Merak S.p.A., Milan, Italy

Division of Ser. No. 521,265, Aug. 8, 1983, Pat. No. 4,473,677. This application Apr. 26, 1984, Ser. No. 604,134

Int. Cl.⁴ D02G *3/00*; D04H *1/04*

U.S. Cl. 428—296 **5 Claims**

1. A fibrous material comprising polyolefinic fibers having improved thermal bonding properties as a result of containing from 0.1 to 5% by weight of the dianhydride of 3,3',4,4'-benzophenone tetracarboxylic acid or of an alkyl derivative thereof having the general formula



wherein each of R_1 to R_6, inclusive, which may be the same or different, is hydrogen or an alkyl radical containing from 1 to 3 carbon atoms.

4,564,554

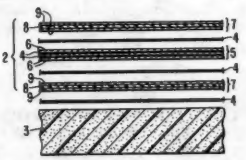
COMPOSITE SHEATHING

John J. Mikuski, Adrian, Mich., assignor to Anthony Industries, Inc., Commerce City, Calif.

Filed Aug. 21, 1984, Ser. No. 642,804

Int. Cl.⁴ B32B *5/24, 5/18, 7/12*

U.S. Cl. 428—311.9 **8 Claims**



1. A laminated composite sheathing adapted to provide structural support and resist weakening from weathering, comprising:

a panel having front and back facing surfaces and formed from a thermal insulating material; and

a supporting laminate sheet bonded to at least one of said panel facing surfaces, comprising a water-resistant fiberboard core adhesively secured between facing sheets.

4,564,555

COATED PART, COATING THEREFOR AND METHOD OF FORMING SAME

Dennis A. Hornberger, Reading, Pa., assignor to Sermatech International Incorporated, Limerick, Pa.

Filed Oct. 27, 1982, Ser. No. 436,989

Int. Cl.⁴ B32B *3/26*

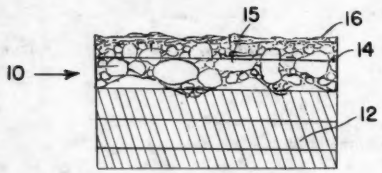
U.S. Cl. 428—312.8 **55 Claims**

1. A corrosion, temperature and abrasion resistant coated article comprising:

(a) a metal base surface;

(b) a first layer adhering to said base surface, said first layer comprising at least one layer of inorganic particulate material bonded in substantially water-insoluble material of a cured aqueous acidic binder comprising phosphate

ions and ions selected from the group consisting of chromate and molybdate ions; and



(c) a second layer on said first layer, said second layer comprising a substantially uniform porous layer of a flame sprayed metal oxide, said metal oxide being substantially electrically neutral.

4,564,556

TRANSPARENT NON-VITREOUS CERAMIC PARTICULATE

Roger W. Lange, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 24, 1984, Ser. No. 653,779
Int. Cl.[4] B32B *5/16, 9/00;* **C01B** *33/16*
U.S. Cl. 428—325 **25 Claims**

1. Solid, transparent, non-vitreous, dense, ceramic microspheres comprising at least one crystalline phase comprising at least one metal oxide other than titanium dioxide, although titanium dioxide may be present in minor amounts, and having an average particle size of more than 125 micrometers, said microspheres being useful as lens elements.

11. A sheet material comprising polymeric binder film in which is embedded a multiplicity of the solid, transparent, ceramic microspheres of claim **1**.

12. A pavement marking sheet material comprising:

a. a base sheet adherable to a roadway surface; and

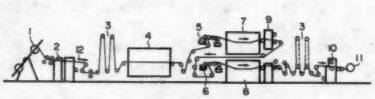
b. the sheet material of claim **11** adhered to one surface of the base sheet.

4,564,557

THERMOSET ACRYLIC RESIN COMPOSITION FOR COATING METALLIC MATERIALS AND STAINLESS STEEL COATED WITH THE COMPOSITION

Masuhito Ohgushi; Hiroshi Ohtsuka; Tsutomu Asaba, all of Yokohamashi; Hironobu Hoshi, Tokyoto; Kenichi Goshokubo, Nakakubikigun; Takeo Wakui, Kashiwashi; Kiminori Ishii, Ebinashi; Masashi Ohno, Hatanoshi, and Yukio Okada, Fujisawashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Apr. 3, 1985, Ser. No. 719,429
Claims priority, application Japan, Apr. 14, 1984, 59-75375; Sep. 25, 1984, 59-199775
Int. Cl.[4] B32B *27/38, 9/04;* **C08F** *24/00, 30/08*
U.S. Cl. 428—333 **9 Claims**



6. A stainless steel piece having thereon a coating comprising a modified acrylic resin as an active ingredient, prepared by subjecting to radical copolymerization 1 20 to 2% by weight of a vinyl group-containing alkoxysilane, 2 20 to 0.01% by weight of a vinyl group-containing polysiloxane, 3 20 to 5% by weight of a hydroxyl group- or epoxy group-containing acrylic acid ester or methacrylic acid ester and 40 to 80% by weight of 4 an acrylic acid ester having 1 to 12 carbon atoms in the ester group moiety or 5 a methacrylic acid ester having 1 to 12 carbon atoms in the ester group moiety, in the presence of 0.1 to 5% by weight of an organic acid having 3 or more carbon atoms, the respective % by weight being based on the total weight of the monomers 1 – 5 , and baked at a temperature of 100° to 350° C.

8. A stainless steel piece according to claim **6** wherein a pigment having an average particle diameter of 2μ or less is contained in said coating.

4,564,558

ORIENTED MULTI-LAYER HEAT SEALABLE FILM

Robert E. Touhsaent, Fairport; John R. Wagner, Jr., Rochester, and Melvil B. Clauson, Newark, all of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 28, 1984, Ser. No. 687,308
Int. Cl.[4] B32B *27/00*
U.S. Cl. 428—349 **9 Claims**

1. A heat sealable multi-layer structure comprising:

(a) a substrate comprising a polyolefin film;

(b) a layer on at least one surface of (a), said layer consisting essentially of a terpolymer of ethylene, propylene, and 1-butene;

(c) a primer coating between layers (b) and (d) on at least one of said layer (b); and

(d) a heat sealable layer on said coating (c) said heat sealable layer being a member selected from the group consisting of a vinylidene chloride polymer and an acrylic polymer.

4,564,559

ORIENTED MULTI-LAYER HEAT SEALABLE FILM

John R. Wagner, Jr., Rochester, and Melvil B. Clauson, Newark, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 28, 1984, Ser. No. 687,417
Int. Cl.[4] B32B *27/00*
U.S. Cl. 428—349 **9 Claims**

1. A heat sealable multi-layer structure comprising:

(a) a substrate comprising a polyolefin film;

(b) a layer on at least one surface of (a), said layer consisting essentially of a blend of (1) a linear low density copolymer of ethylene with a minor proportion of a C_3–C_{10} alpha olefin (LLDPE) and (2) polypropylene;

(c) a primer coating between layers (b) and (d) on at least one of said layer (b); and

(d) a heat sealable layer on said coating (c) said heat sealable layer being a member selected from the group consisting of a vinylidene chloride polymer and an acrylic polymer.

4,564,560

RECORDING SHEETS FOR WATER BASE INK AND PROCESS FOR MAKING THE SAME

Hideki Tani, Tokorozawa; Makoto Arai; Takayuki Sasaki, both of Wakabayashi; Kazuhide Hayama, and Akira Yamashita, both of Yokkaichi, all of Japan, assignors to Sanyo-Kokusaku Pulp Co., Ltd. and Mitsubishi Yuka Fine Chemicals Co., Ltd., both of Tokyo, Japan

Filed Aug. 31, 1984, Ser. No. 646,080
Claims priority, application Japan, Dec. 29, 1983, 58-250560
Int. Cl.[4] B41M *5/00*
U.S. Cl. 428—411.1 **4 Claims**

1. A sheet for water base ink jet recording or X–Y plotter recording, in which a backing substrate includes a surface layer obtained by ultraviolet or radiation curing of a composition composed mainly of an ultraviolet or radiation curing type resin starting from a natural high-molecular substance.

4,564,561

FLUORINE-CONTAINING POLYMER COMPOSITIONS AND THEIR PREPARATION

Albert L. Lore, and Stuart Raynolds, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 27, 1985, Ser. No. 716,422
Int. Cl.[4] C08L 27/12, 33/14
U.S. Cl. 428—422 25 Claims

1. Fluorine-containing polymeric compositions consisting essentially of mixtures of

(1) an addition polymer of at least one monomer having the formula

$$CF_3CF_2(CF_2)_kC_mH_{2m}OC(O)C(R)=CH_2, \text{ and}$$

(2) an addition copolymer of

(a) at least one monomer having the formula

$$CF_3CF_2(CF_2)_kC_mH_{2m}OC(O)C(R)=CH_2,$$

(b) at least one monomer having the formula

$$XCH_2CH(OH)CH_2OC(O)C(R^1)=CH_2,$$

(c) at least one monomer having the formula

$$R^2OC(O)C(R^3)=CH_2, \text{ and}$$

(d) at least one monomer having the formula

$$H(OCH_2CH_2)_nOC(O)C(R^4)=CH_2$$

wherein

R, R^1, R^3, and R^4 are the same or different H or CH_3;
R^2 is alkyl containing 2 to 18 carbons;
X is Cl or Br;
k is an integer from 2 to 18;
m is an integer from 1 to 15; and
n is an integer from 5 to 50;

based upon the total weight of the polymeric composition, the fluorinated monomer or mixture of fluorinated monomers constituting 20 to 80 percent by weight of the composition; the chlorine- or bromine-containing monomer constituting between 5 and 35 percent by weight of the composition; the alkyl acrylate or methacrylate constituting between 5 and 55 weight percent of the composition and the oxyethylated acrylate or methacylate constituting between 0.1 and 3 weight percent thereof.

4,564,562

SILICONE ENCAPSULATED DEVICES

Ching-Ping Wong, Lawrence Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed May 29, 1984, Ser. No. 614,898
Int. Cl.[4] B32B 9/04
U.S. Cl. 428—447 10 Claims

1. An article of manufacture comprising an electronic device having a heat cured silicone resin encapsulant thereover wherein said encapsulant is derived from curing an oxime and water free heat curable resin silicone elastomer prepolymer consisting essentially of from 20 to 25 weight percent of the prepolymer having an average molecular weight of from 400,000 to 600,000; 0.5 to 2 weight percent of a dialkylaminoalkoxysilane wherein neither of the amine nitrogen atoms are directly coupled to the silicon atom; 0 to 80 weight percent inorganic filler; and 0 to 2 weight percent curing catalyst.

4,564,563

SOLDERABLE CONDUCTOR

F. Wayne Martin, Baldwin Place; Samson Shahbazi, Yonkers, and Ronald J. Schoonejongen, Carmel, all of N.Y., assignors to Electro Materials Corp. of America, Mamaroneck, N.Y.

Filed Sep. 30, 1983, Ser. No. 537,740
Int. Cl.[4] H01B 3/30
U.S. Cl. 428—546 7 Claims

1. A solderable electrically conductive composition comprising metallic silver particles embedded in a matrix formed from acrylic, carboxylated vinyl and an epoxy, in which said metallic silver particles make up approximately 82% by weight of said composition, said acrylic makes up from 6 to 9% by weight of said composition, said carboxylated vinyl makes up from 7 to 9% by weight of said composition and said epoxy makes up from 1.7 to 3% by weight of said composition.

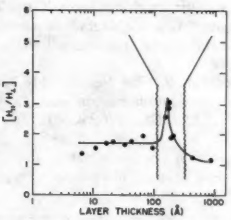
3. An article comprising a substrate carrying a solderable electrically conductive composition comprising metallic silver particles embedded in a matrix formed from acrylic, carboxylated vinyl and an epoxy in which said metallic silver particles make up approximately 82% by weight of said composition, said acrylic makes up from 6 to 9% by weight of said composition, said carboxylated vinyl makes up from 7 to 9% by weight of said composition and said epoxy makes up from 1.7 to 3% by weight of said composition, said composition being capable of accepting solder.

4,564,564

SUPERCONDUCTING MAGNET WIRE

Ivan K. Schuller, Woodridge; John B. Ketterson, Evanston, both of Ill., and Indrajit Banerjee, San Jose, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 16, 1983, Ser. No. 523,990
Int. Cl.[4] B32B 15/04, 15/20; H01L 39/12
U.S. Cl. 428—662 15 Claims



1. A superconducting metallic tape comprising at least 100 alternating layers of a niobium-containing superconductor and copper, with each layer of the superconductor having a thickness in the range of about 0.5–1.5 times the coherence length for the superconducting composition and each copper layer thickness in the range of about 170–600 Å.

4,564,565

METHOD OF MAKING LOW CONTACT RESISTANCE METALLIC COATINGS AND ELECTRICAL CONTACTS SO PRODUCED

Rodger L. Gamblin, Dayton, Ohio, assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed May 18, 1984, Ser. No. 611,968
Int. Cl.[4] C25D 3/12
U.S. Cl. 428—680 17 Claims

7. An electrical contact having a nickel matte contact surface with a contact resistance shortly after production of less than 1.5 milliohms, and produced by practicing the steps of:

(a) immersing an electrically conductive substrate in a plating bath consisting of between about 0.1 and 2 molar nickel ion, and between about 1 gram per liter up to the

solubility limit of anions selected from the group consisting of TiF_6—, ZrF_6—, HfF_6—, and TaF_7—;

(b) controlling the bath temperature conditions, pH, and current density to effect electrolytic deposition of the nickel on the substrate; and then

(c) removing the substrate from the bath.

8. A method of forming an electrical contact surface consisting of the steps of:

(a) immersing an electrically conductive substrate in a plating bath including nickel cations, and anions selected from the group consisting of: TiF_6—, ZrF_6—, HfF_6—, and TaF_7;

(b) controlling the bath temperature, pH, and current density to effect electrolytic deposition of the nickel, in crystalline form, on the substrate; and

(c) removing the electrolytically deposited substrate from the bath.

4,564,566

CHROMIUM CONTAINING ALLOY FOR FABRICATING PRESSING TOOLS, PRESSING PLATES FORMED FROM SUCH ALLOY AND METHOD OF FABRICATION THEREOF

Werner J. Jerlich, Mürzzuschlag; Hans Kaiserfeld, Krieglach, and Alfred Kügler, Mürzzuschlag, all of Austria, assignors to Vereinigte Edelstahlwerke Aktiengesellschaft, Vienna, Austria

Filed Jun. 8, 1984, Ser. No. 618,938

Claims priority, application Austria, Jun. 28, 1983, 2359/83

Int. Cl.⁴ C22C *39/00*; C03B *9/00*

U.S. Cl. 428—687 **17 Claims**

1. A method of using a stainless hardenable chromium steel essentially consisting of, each in percent by weight:

carbon	up to	0.3
silicon	up to	1.0
manganese	up to	1.5
Chromium in the amount of		11 to 17.2
molybdenum	up to	1.5
nickel	up to	6.0
copper	up to	4.5
columbium	up to	0.45
nitrogen	up to	0.10
the remainder being iron and impurities resulting from the melting conditions;		

said chromium alloy containing ferrite in an amount smaller than or equal to 5% by weight,

wherein a chromium equivalent defined as the sum of % chromium+% molybdenum+1.5×% silicon+0.5×% columbium has a value smaller than or equal to 17.2, a nickel equivalent defined as the sum of % nickel+0.5×% manganese+30×% carbon+20×% nitrogen has a value greater than or equal to 4.65 and the chromium equivalent to nickel equivalent ratio has a value smaller than or equal to 3.0; and

for producing a pressure plate of a pressing tool containing a structured working surface.

4,564,567

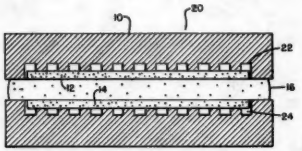
ELECTRONICALLY CONDUCTIVE CERAMICS FOR HIGH TEMPERATURE OXIDIZING ENVIRONMENTS

Gene H. Kucera, Downers Grove; James L. Smith, Lemont, and James W. Sim, Evergreen Park, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 10, 1983, Ser. No. 550,697

Int. Cl.⁴ H01M *4/86*

U.S. Cl. 429—41 **4 Claims**



1. A fuel cell comprising a fuel electrode, and oxidant electrode, an electrolyte member disposed between the electrodes, said member containing alkali metal carbonate mixture including lithium carbonate, the oxidant electrode comprising the electronically-conductive lithium, transition-metal oxide selected from the group consising of Li_2MnO_3 with magnesium dopant and $LiFeO_2$ with manganese dopant the oxide having electronic conductivity as measured by a resistivity below about 100 ohm-cm., high temperature stability in the presence of molten alkali metal carbonate including lithium carbonate at a temperature in the order of 500°–700° C., and a crystalline structure incorporating the lithium and transition metals and the dopant incorporated in the crystalline structure as a partial substituent for one of said metals.

4,564,568

ELECTROCHEMICAL STORAGE CELL

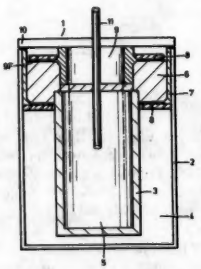
Dieter Hasenauer, Weinheim, and Kuno Hug, Heidelberg, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed Nov. 2, 1984, Ser. No. 667,871

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1983, 3340424

Int. Cl.⁴ H01M *10/39*

U.S. Cl. 429—104 **12 Claims**



1. Electrochemical storage cell based on alkali metal and chalcogen comprising an anodic space for the alkali metal and a cathodic space for the chalcogen which spaces are separated from each other by an alkali ion-conducting solid electrolyte and are limited at least area-wise by a metallic housing, and ceramic structural elements connected with metallic structural elements by thermocompression, the combination therewith of metallic structural elements connected with ceramic structural

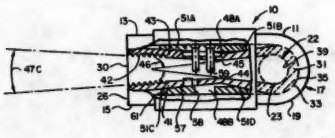
elements by thermocompression to form joints, wherein the metallic structural elements made of aluminum are in the joint region reduced in thickness and made thin-walled with a thickness of at most 0.5 mm, and the thin walls are supported areawise by reinforcement elements arranged in the joint region.

4,564,569

BATTERY TERMINAL CONNECTOR

Frank Pechal, 519 E. St. Apt. D17, Chula Vista, Calif. 92010

Filed Aug. 10, 1984, Ser. No. 639,573
Int. Cl.[4] H01M *2/20*; H01R *4/50*
U.S. Cl. 429—121 **10 Claims**



1. A connector for electrical conductive connection to a terminal post, said connector comprising:

a nonconductive chassis;

a conductor positioned within said chassis and formed to removably fit about, but not entirely surround, a terminal post for conductive connection thereto, said conductor being formed with an extension which extends away from said post substantially normal thereto, said extension formed to be spring-like;

compression means in mechanical association with said chassis and operable to move said extension to tighten and loosen said conductor means about said post, wherein said compression means include wedge means movable between a first position in which the wedge means urges the extension to tighten it about the terminal post, and a second position in which the wedge means does not urge the extension to tighten it about the said post so that said connector can be positioned on and removed from said terminal post; and

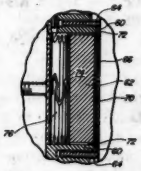
cable security means to conductively connect a cable to said conductor.

4,564,570

SEAL FOR REACTIVE METAL ANODE

Arnold Z. Gordon, Lyndhurst, Ohio, assignor to Gould, Inc., Rolling Meadows, Ill.

Filed Oct. 15, 1984, Ser. No. 661,061
Int. Cl.[4] H01M *2/32*
U.S. Cl. 429—212 **22 Claims**



1. A seal for a reactive metal anode of an electrochemical cell comprising said anode, a cathode, and an electrolyte in which said anode and said cathode are in contact during operation of said cell, said anode defining a first surface which contacts said electrolyte and at least one additional surface at the perimeter of at least a portion of said first surface, said seal comprising a coating on said additional surface of a hydrophobic polymer which is substantially chemically inert with respect to said reactive metal and said electrolyte and wherein:

(a) the ratio of the flexural modulus to the flexural strength of said polymer is at least about 25;

(b) the Izod impact value of said polymer is less than or equal to about 2.0 ft.-lb./in.; and,

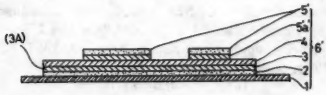
(c) the percent elongation of said polymer is less than or equal to about 20%.

4,564,571

TRANSFER SHEET WITH COLOR PATTERN HAVING METALLIC LUSTER, AND METHOD OF MANUFACTURING SAID SHEET

Jun Masaki, 9-11, Yamaashiya-cho, Ashiya-shi, Hyogo-ken, Japan

Filed Feb. 21, 1984, Ser. No. 581,829
Claims priority, application Japan, Mar. 31, 1983, 58-57029; Oct. 31, 1983, 58-204588
Int. Cl.[4] G03C *1/68, 1/90*; G03F *7/00*
U.S. Cl. 430—15 **4 Claims**



1. A transfer sheet with a color pattern having metallic luster comprising: a transparent or semi-transparent base film, a mold-removing film layer on one side of said base film, a transparent semi-aqueous coloring agent layer in the form of a desired pattern on said mold-removing film layer, a vapor-coated aluminum layer in the form of said desired pattern on said transparent coloring agent layer, an oily ink protective film layer in the form of said desired pattern on said vapor-coated aluminum layer, and an adhesive film layer in the form of said desired pattern on said protective film layer, wherein the adhesive film layer is made of an oily paste.

4,564,572

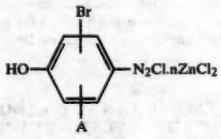
PROCESS FOR FORMING PATTERN

Hajime Morishita; Kiyoshi Miura, both of Tokyo; Osamu Sasaya, and Saburo Nonogaki, both of Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 24, 1985, Ser. No. 694,237
Claims priority, application Japan, Jan. 25, 1984, 59-10066
Int. Cl.[4] B05D *3/06*
U.S. Cl. 430—28 **11 Claims**

1. A process for forming a pattern which comprises

(1) a step of coating a photosensitive composition comprising p-diazo-N,N-dimethylaniline chloride-zinc chloride double salt and a p-diazo-bromophenol chloride-zinc chloride double salt of the formula:



(I)

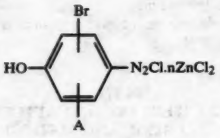
wherein A is hydrogen or bromine; and n is $\frac{1}{4}$ to 1, on the interior side of a face plate of a color picture tube to form a coating film,

(2) a step of imagewisely exposing the coating film to light to make the exposed portions sticky, and

(3) a step of contacting powder particles with the exposed coating film to adhere the powder particles to the exposed portions.

7. A photosensitive composition comprising p-diazo-N, N-dimethylaniline chloride-zinc chloride double salt and a

p-azido-bromophenol chloride-zinc chloride double salt of the formula:



(I)

wherein A is hydrogen or bromine; and n is ½ to 1.

4,564,573

ELECTROSTATIC IMAGE FORMING TONER

Hideaki Morita; Takahira Kasuya; Goichi Yamakawa; Makoto Tomono, all of Hachioji; Isao Furuta, Suzuka, and Minoru Tsuneyoshi, Yokkaichi, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd. and Japan Synthetic Rubber Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 356,523, Mar. 9, 1982, abandoned. This application Jul. 24, 1984, Ser. No. 634,173

Claims priority, application Japan, Mar. 13, 1981, 56-35168; Mar. 13, 1981, 56-35169; Mar. 13, 1981, 56-35170

Int. Cl.[4] G03G *11/00*

U.S. Cl. 430—109 10 Claims

1. A toner for developing electrostatic images which comprises a binder resin comprising at least 60% by weight of a styrene-butadiene copolymer, in which said copolymer contains a component having a molecular weight of at least 100,000 in an amount of at least 20% by weight of the entire binder resin provided that a component having a molecular weight of more than 500,000 is not more than 15% by weight of the entire resin and the ration $(\overline{M}_w/\overline{M}_n)$ of the weight average molecular weight to the number average molecular weight of said styrene-butadiene copolymer is at least 20.

4,564,574

LIQUID DEVELOPER FOR DEVELOPMENT OF ELECTROSTATIC IMAGES

Herman J. Uytterhoeven, Bonheiden; Walter F. De Winter, 's-Gravenwezel, and August M. Marien, Oevel, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Jul. 18, 1984, Ser. No. 632,059

Claims priority, application European Pat. Off., Aug. 5, 1983, 83201162.1

Int. Cl.[4] G03G *9/12*

U.S. Cl. 430—115 14 Claims

1. A liquid electrophoretic developer composition suitable for rendering visible electrostatically charged areas, which composition contains in an electrically insulating non-polar carrier liquid having a volume resistivity of at least 10^9 ohm.cm and a dielectric constant less than 3, dispersed colouring matter acting as toner particles and at least one polymer comprising cationic groups neutralized with counter anions, characterized in that said cationic groups are positively charged groups of metal ion containing coordination compounds.

4,564,575

TAILORING OF NOVOLAK AND DIAZOQUINONE POSITIVE RESISTS BY ACYLATION OF NOVOLAK

Stanley E. Perreault, and Robert L. Wood, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

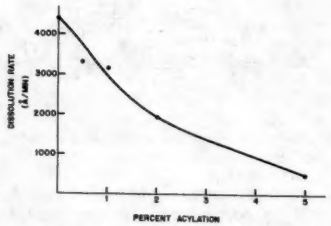
Filed Jan. 30, 1984, Ser. No. 560,781

Int. Cl.[4] G03C *1/60, 1/76;* G03F *7/26*

U.S. Cl. 430—165 39 Claims

1. A positive lithographic resist composition comprised of an admixture of a novolak resin, in sufficient quantity amount when combined with a photoactive component to be developable to form a positive image, and a radiation-sensitive diazoquinone in sufficient amount to function as the photoactive component in an electron bem or optical process, wherein said novolak resin has hydroxyl groups thereof acylated so that an acyl group having the structure RCO— exists in place of the hydrogen at at least a portion of the phenolic hydroxyl locations in order to reduce solubility in alkaline developers, and where R is a saturated aliphatic group containing from 1 to 4 carbon atoms.

14. A substrate coated with a layer of a photoresist comprised of an admixture of a novolak resin, in sufficient quantity amount when combined with a photoactive component to be developable to form a positive image, and a radiation-sensitive diazoquinone in sufficient amount to function as the photosensitive component in an electron beam or optical process, wherein said novolak resin has phenolic hydroxyl groups



acetylated so that an acyl group having the structure RCO— exists in place of the hydrogen at at least a portion of the phenolic hydroxyl locations in order to reduce solubility in alkaline developers, and where R is a saturated aliphatic group containing from 1 to 4 carbon atoms.

21. A method of reducing the dissolution rates of novolak-diazoquinone resists in alkaline solution, comprising:

(a) providing said novolak resin;

(b) acylating the phenolic hydroxyl groups of said novolak resin, so that an acyl group having the structure RCO— exists in place of the hydrogen at at least a portion of the phenolic hydroxyl locations, and where R is an alkyl group containing from 1 to 4 carbon atoms; and

(c) adding said diazoquinone thereto.

4,564,576

RESIST MATERIAL COMPRISING POLYMER OF ALLYLSILYL COMPOUND AND PATTERN FORMING METHOD USING THE RESIST MATERIAL

Kazuhide Saigo, and Masayoshi Suzuki, both of Tokyo, Japan, assignors to NRC Corporation, Tokyo, Japan

Filed May 22, 1984, Ser. No. 612,925

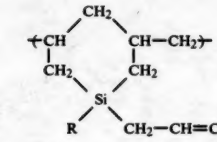
Claims priority, application Japan, May 27, 1983, 58-93577; Oct. 26, 1983, 58-200408

Int. Cl.[4] G03C *1/68, 1/70, 5/16;* C08F *30/08*

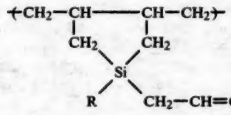
U.S. Cl. 430—197 11 Claims

1. A resist material comprising a polymer produced by polymerization of a monomer having an allylsilyl group, said monomer being a triallylsilane expressed by the formula R—Si($C-H_2—CH=CH_2$)$_3$, where R represents a hydrogen atom, methyl group, ethyl group, propyl group or phenyl group; and a photosensitive cross-linking agent which is a bis-azide compound and amounts to 0.1–50% by weight of said polymer.

2. A resist material according to claim 1, wherein said polymer comprises at least one structural unit selected from the group consisting of the structural units of the formulas (I) and (II), said polymer being produced by carrying out bulk or solvent polymerization of said triallylsilane at a temperature in the range from 60° to 150° C. for a period of 4 to 50 hr using a radical polymerization initiator amounting to 1–10 mole % of said triallylsilane:



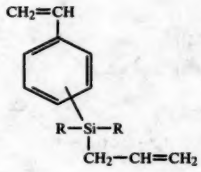
(I)



(II)

where R represents a hydrogen atom, methyl group, ethyl group, propyl group or phenyl group.

4. A resist material comprising a polymer produced by polymerization of a monomer having an allylsilyl group, said monomer being an allylsilylstyrene expressed by the general formula



where R represents a hydrogen atom, methyl group, ethyl group, propyl group or allyl group.

4,564,577

NAPHTHOQUINONE REDOX DYE-RELEASERS

William J. Begley, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 13, 1985, Ser. No. 733,151

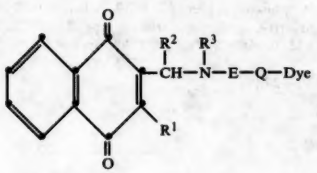
Int. Cl.[4] G03C *1/40, 5/54*

U.S. Cl. 430—223 **26 Claims**

13. In a photographic assemblage to be processed with an alkaline processing composition comprising:

(a) a photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a nondiffusible, positive-working, redox dye-releaser capable of releasing at least one diffusible dye moiety; and

(b) a dye image-receiving layer; the improvement wherein said compound has the formula:



wherein:

(a) R^1 represents a substituted or unsubstituted alkyl group of from 1 to about 30 carbon atoms or a substituted or unsubstituted aryl group of from 6 to about 12 carbon atoms;

(b) R^2 and R^3 each independently represents hydrogen or R^1;

(c) E represents carbonyl or thiocarbonyl;

(d) Q represents a nonmetallic atom of Group VA or VIA of the periodic table in its minus 2 or minus 3 valence state; and

(e) Dye represents a diffusible dye moiety or precursor thereof;

with the proviso that at least one of R^1, R^2 and R^3 is an organic ballasting radical of such molecular size and configuration as to render said compound nondiffusible in said photographic element during development in an alkaline processing composition.

4,564,578

NOVEL THIOXANTHONES SUBSTITUTED BY ALPHA-AMINOALKYL GROUPS

Jürgen Finter, Freiburg, Fed. Rep. of Germany, and Walter Fischer, Reinach, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

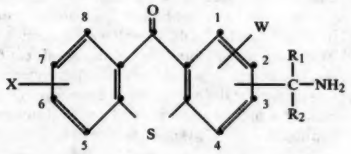
Filed Nov. 14, 1983, Ser. No. 551,761

Claims priority, application Switzerland, Nov. 25, 1982, 6873/82

Int. Cl.[4] G03C *1/68, 1/70, 1/71;* C07C *87/28*

U.S. Cl. 430—270 **13 Claims**

1. A compound of the formula I

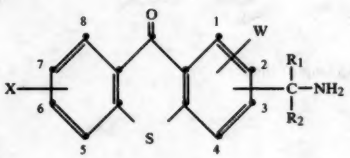


(I)

in which X is hydrogen, chlorine, bromine, C_{1-4}-alkyl or C_{1-6}-alkoxy, R_1 is hydrogen, C_{1-6}-alkyl, phenyl, $-COOCH_3$ or $-COOC_2H_5$ and R_2 is hydrogen, C_{1-6}-alkyl, $-COOCH_3$ or $-COOC_2H_5$, or R_1 and R_2 together are $-(CH_2)_e-$, where e=4 or 5, and W is hydrogen or $-COOC_{1-4}$-alkyl.

5. Photosensitive compositions of matter which are capable of undergoing condensation or addition reactions, containing

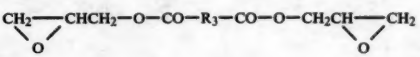
(1) a thioxanthone of the formula I



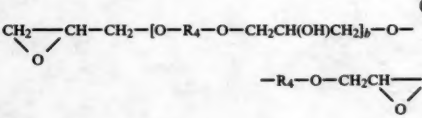
(I)

in which X is hydrogen, chlorine, bromine, C_{1-4}-alkyl or C_{1-6}-alkoxy, R_1 is hydrogen, C_{1-6}-alkyl, phenyl, $-COOCH_3$ or $-COOC_2H_5$ and R_2 is hydrogen, C_{1-6}-alkyl, $-COOCH_3$ or $-COOC_2H_5$, or R_1 and R_2 together are $-(CH_2)_e-$, where e,=4 or 5, and W is hydrogen or $-COOC_{1-4}$alkyl,

(2) one or more compounds selected from di- to poly-glycidyl ethers of phenol novolaks and cresol novolaks and compounds of the formulae XI to XIII



(XI)



(XII)

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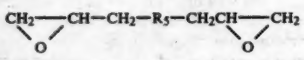
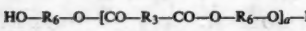
and

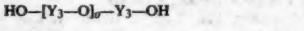


(XIII)

and, in the further presence or absence of, compounds of the formulae XIV, XV and/or XVI

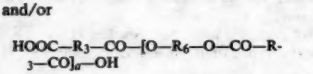


(XIV)



(XV)

and/or



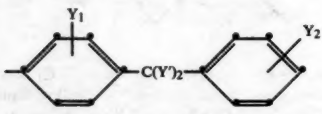
(XVI)

the proportion of compounds of the formulae XIV, XV and/or XVI being at most 80 mole %, based on all the reactants mentioned under (2)

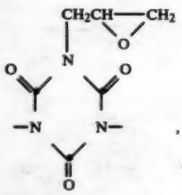
(3) in the presence or absence of a crosslinking agent and

(4) in the presence or absence of a salt of a metal of group Ib or VIII of the Periodic Table, in which a is a number form 1 to 100, b is a number from 0 to 150, R_3 is a direct bond, $-C_mH_{2m}O$, where m=2-12, or cyclohexylene, cyclohexenylene, phenylene or endomethylenecyclohexenylene, each of which is unsubstituted or substituted by a methyl group, R_4 is $-C_mH_{2m}-$, where m=2-12, phenylene,

or a group of the formula



or $-(Y_3O)_o-Y_3-$ Y' is hydrogen or methyl, Y_1 and Y_2 independently of one another are hydrogen, chlorine or bromine, Y_3 is $-(CH_2)_2-$, $-CH_2CH(CH_3)-$ or $-(CH_2)_4-$, o is a number from 1 to 50, R_5 is



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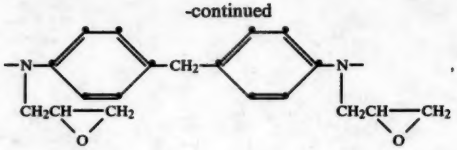
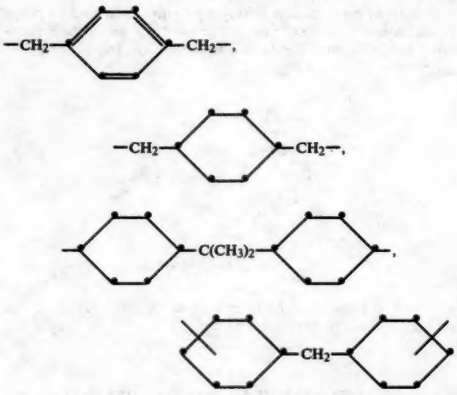


or the radical of ethylene-urea, 1,3-propylene-urea, 5,5-dimethylhydantoin, 2-hydroxyethyl-5,5-dimethylhydantoin or 2-hydroxypropyl-5,5-dimethylhydantoin and R_6 is $-C_mH_{2m}-$, where m=2-12, $-(CH_2CH_2O)_r-CH_2CH_2$, where r=1-40, $-CH(CH_3)CH_2OCH_2CH(CH_3)-$, $-CH_2-C(CH_3)_2-OCO-C(CH_3)_2CH_2-$, cyclohexylene,



naphthylene or biphenylene, or phenylene which is unsubstituted or substituted by a methyl, methoxy or nitro group.

4,564,579

PATTERN FORMING MATERIAL OF A SILOXANE POLYMER

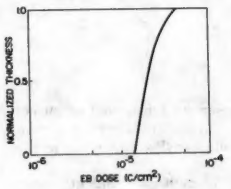
Masao Morita; Akinobu Tanaka; Saburo Imamura, all of Mito; Toshiaki Tamamura, Katsuta, and Osamu Kogure, Mito, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Division of Ser. No. 580,468, Feb. 15, 1984, Pat. No. 4,507,384. This application Dec. 12, 1984, Ser. No. 680,739

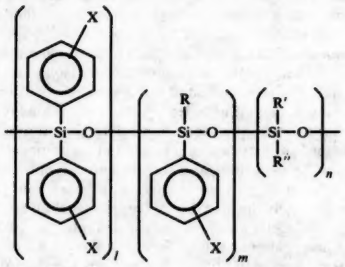
Claims priority, application Japan, Apr. 18, 1983, 58-66892; Apr. 18, 1983, 58-66893; Jul. 11, 1983, 58-124766

Int. Cl.[4] G03C 5/00

U.S. Cl. 430—270 **6 Claims**



1. A pattern forming material containing a siloxane polymer having the general formula:



[wherein R, R′ and R″ are the same or different and are respectively one member selected from the group consisting of hydrogen, an alkyl group and a phenyl group; X is one member selected from the group consisting of fluorine, chlorine, bromine, iodine and a —CH_2Y group (wherein Y is one member selected from the group consisting of chlorine, fluorine, bromine, iodine, an acryloyloxy group, a methacryloyloxy group, and a cinnamoyloxy group); and l, m and n are respectively 0 or a positive integer, l and m not being simultaneously 0].

4,564,580

PHOTOSENSITIVE RESIN COMPOSITION

Kunihiro Ichimura, Yatabe; Tsuguo Yamaoka, Funabashi; Sadayoshi Kaneda, and Toru Shibuya, both of Tokyo, all of Japan, assignors to Kogyo Gijutsuin and Murakami Screen Kabushiki Kaisha, both of Tokyo, Japan

Filed Jun. 26, 1984, Ser. No. 624,963

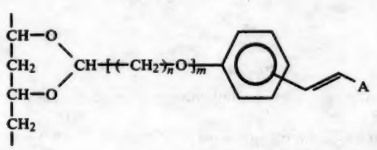
Claims priority, application Japan, Jun. 30, 1983, 58-118486; Jun. 30, 1983, 58-118487; Jun. 30, 1983, 58-118488; May 23, 1984, 59-104236

Int. Cl.⁴ G03C *1/68*

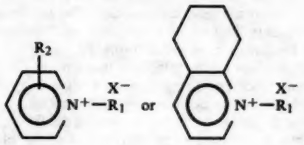
U.S. Cl. 430—281 **7 Claims**

1. A photo-sensitive resin composition in the form of an aqueous emulsion comprising the following components (1) through (4):

(1) a water soluble saponified vinyl acetate polymer to which a styrylpyridinium or a styrylquinolinium group has been added, the polymer having been obtained by adding 0.3 to 20 mole % of a styrylpyridinium group or styrylquinolinium group to a saponified vinyl acetate polymer having a polymerization degree of 300 to 3000 and a saponification degree of 70 to 99 mole %, and having a styrylpyridinium group or styrylquinolinium group represented by the following formula inclusively of the chain of the vinyl acetate polymer:



wherein: m is 0 or 1; n is an integer of from 1 to 6; and A stands for;



in which: R_1 stands for a hydrogen atom or an alkyl or aralkyl group which may contain a hydroxyl group, a carbamoyl group, an ether bond or an unsaturated bond; R_2 stands for a hydrogen atom or a lower alkyl group; and X^- stands for a halide ion, a phosphate ion, a p-toluenesulfonate ion, a methyl sulfate ion, an ethyl sulfate ion or a mixture of two or more of these anions; the polymer being dissolved in said composition;

(2) a polymer selected from the group consisting of water-dispersible polymers and hydrophobic polymers, the water-dispersible polymers being dispersed in said composition and the hydrophobic polymers being emulsified in said composition;

(3) a photo-polymerizable unsaturated compound having at least one ethylenically unsaturated group, the unsaturated compound being insoluble or hardly soluble in water and capable of being emulsified in an aqueous solution of the polymer of the component (1);

(4) a photo-polymerization initiator, the initiator being soluble in the unsaturated compound of the component (3);

the amounts of the components being such that the amount of the polymer of component (1) is 0.2 to 10 parts by weight per part of the polymer of component (2), the amount of the unsaturated compound of component (3) is 0.1 to 15 parts by weight per part of the polymer of component (2), and the amount of the initiator of component (4) is 0.001 to 0.15 part by weight of the unsaturated compound of component (3); the composition being capable, in the form of dried film produced therefrom and when irradiated with light of, becoming insoluble at the portion which has been irradiated with light but remaining soluble in water at the portion which has not been irradiated with light.

4,564,581

PROCESS OF PREPARING SCREEN STENCIL USING DIAZO PHOTOSENSITIVE COMPOSITIONS WITH ACIDIC P-H INDICATOR

John R. Curtis, Thanet, and John D. Renwick, Ramsgate, both of England, assignors to Sericol Group Limited, London, England

Division of Ser. No. 389,487, Jun. 17, 1982, abandoned. This application Jul. 13, 1984, Ser. No. 629,759

Claims priority, application United Kingdom, Jun. 19, 1981, 8118929

Int. Cl.⁴ G03F *7/12*

U.S. Cl. 430—308 **3 Claims**

1. A process for preparing a screen stencil by the indirect method which comprises coating a photosensitive composition onto a transparent support, drying the coating, exposing the coating to actinic light via a positive transparency, developing the exposed coating, causing the developed coating to adhere to the screen mesh by pressure, drying the coating, and removing the support to produce a screen stencil wherein the photosensitive composition comprises:

25 to 53% by weight of film-forming polymers, including a water-soluble crosslinkable polymeric colloid;

0.2 to 2.5% by weight of a diazo salt as photosensitizer;

45 to 60% by weight of water;

and 0.06 to 0.15% by weight of an indicator which changes substantially in hue over a pH range of less than 3 units within the range 1.2 to 6;

the pH of the composition being maintained by a buffer on

the high side of the pH range over which the indicator changes hue and such that, in a light sensitive layer formed from the said composition, the indicator has the hue characteristic of its base form, so that after a layer thereof has been exposed to light the hue of the indicator shifts from that in the base form into that of the acid form.

2. A method of preparing a screen stencil by the direct method which comprises coating a composition onto the screen mesh, drying the coating, exposing the dried coating to actinic light via a positive transparency, and developing and drying the exposed layer to produce a screen stencil, wherein the composition comprises:

25 to 53% by weight of film-forming polymers, including a water-soluble crosslinkable polymeric colloid;

0.2 to 2.5% by weight of a diazo salt as photosensitizer;

45 to 60% by weight of water;

and 0.06 to 0.15% by weight of an indicator which changes substantially in hue over a pH range of less than 3 units within the range 1.2 to 6;

the pH of the composition being maintained by a buffer on the high side of the pH range over which the indicator changes hue and such that, in a light sensitive layer formed from the said composition, the indicator has the hue characteristic of its base form, so that after a layer thereof has been exposed to light the hue of the indicator shifts from that in the base form into that of the acid form.

3. A method of preparing a screen stencil by the direct-indirect method which comprises coating a composition onto a screen mesh in direct contact with an unsensitised film on a support, drying the coating, removing the support, exposing the dried coating to actinic light via a positive transparency, and developing the exposed coating to produce a screen stencil, wherein the composition comprises:

25 to 53% by weight of film-forming polymers, including a water-soluble crosslinkable polymeric colloid;

0.2 to 2.5% by weight of a diazo salt as photosensitizer;

45 to 60% by weight of water;

and 0.06 to 0.15% by weight of an indicator which changes substantially in hue over a pH range of less than 3 units within the range 1.2 to 6;

the pH of the composition being maintained by a buffer on the high side of the pH range over which the indicator changes hue and such that, in a light sensitive layer formed from the said composition, the indicator has the hue characteristic of its base form, so that after a layer thereof has been exposed to light the hue of the indicator shifts from that in the base form into that of the acid form.

4,564,582

METHOD FOR MAKING CARRIER TAPE

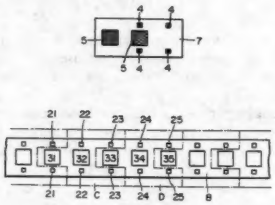
Shu Miyazaki, Fussa, Japan, assignor to Sumitomo Metal Mining Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1983, Ser. No. 550,380

Claims priority, application Japan, Nov. 12, 1982, 57-198735

Int. Cl.[4] G03C *5/00*

U.S. Cl. 430—311 **2 Claims**



1. A method of making a carrier tape which has a middle part, opposite outer parts, a succession of finger lead clusters which are equally spaced apart a predetermined distance (pitch) along its middle part and a succession of aligned pairs of sprocket holes which are equally spaced apart said predetermined distance (pitch) along its respective outer parts, said method including the steps of (a) providing a metallic foil tape having a photoresist material on one side thereof, (b) providing a photomask which consists of a base element which includes an elongated section that is divided into an elongated middle portion and opposite elongated outer portions, said base element having a single finger lead pattern and a single pair of aligned sprocket hole patterns extending therethrough, said single finger lead pattern being located in said elongated middle portion of said elongated section and the sprocket hole patterns of said single pair of aligned sprocket hole patterns being respectively located in said opposite elongated outer portions of said elongated section, said single pair of aligned sprocket hole patterns being displaced along said elongated section from said single finger lead pattern a certain distance equal to one pitch or multiples thereof, said single finger lead pattern having no sprocket hole patterns located laterally outwardly thereof and said single pair of sprocket hole patterns having no finger lead pattern located laterally inwardly thereof, and (c) exposing sequential sections of said photoresist material along the length of said metallic foil tape to radiation passing through said photomask, such that said metallic foil tape is provided with a succession of finger lead clusters formed in the middle part thereof which are separated by a distance equal to one pitch, each finger lead cluster having a pair of aligned sprocket holes located laterally thereof along the length of said metallic foil tape except for the number of finger lead clusters at the lead end of said metallic foil tape equal to the number of pitches the single pair of aligned sprocket hole patterns are spaced from the single lead patterns on said photomask.

4,564,583

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

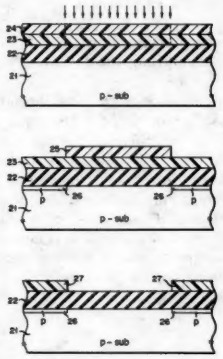
Kenji Maeguchi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 1, 1984, Ser. No. 575,921

Claims priority, application Japan, Feb. 7, 1983, 58-18533; Feb. 24, 1983, 58-29709; Feb. 24, 1983, 58-29724

Int. Cl.[4] G03C *5/00*; H01L *21/00*

U.S. Cl. 430—312 **15 Claims**



1. A method for manufacturing a semiconductor device, comprising:

a step of forming a positive-type resist film and a negative-type resist film on a semiconductor substrate to form upper and lower resist films;

a step of exposing predetermined regions of the positive-type and negative-type resist films to radiation;

a step of developing the upper resist film, thereby forming a first resist pattern, and ion-implanting an impurity into the semiconductor substrate by using the first resist pattern as a mask;

a step of developing the lower resist film after peeling off the first resist pattern, thereby forming a second resist pattern; and

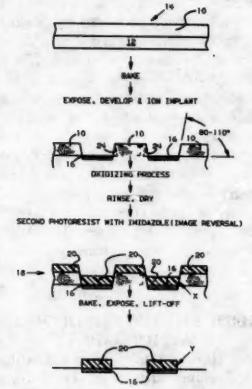
a step of treating the semiconductor substrate, using the second resist pattern as a mask.

4,564,584

PHOTORESIST LIFT-OFF PROCESS FOR FABRICATING SEMICONDUCTOR DEVICES

Edward C. Fredericks, Haymarket, and Harish N. Kotecha, Manassas, both of Va., assignors to IBM Corporation, Armonk, N.Y.

Filed Dec. 30, 1983, Ser. No. 567,034
Int. Cl.[4] G03F 7/26, 9/00
U.S. Cl. 430—312 **3 Claims**



1. A photoresist lift-off process for fabricating semiconductor devices comprising the steps of:

applying a first layer of positive photoresist on the surface of a semiconductor substrate;

exposing said first photoresist layer to light through a mask having at least one aperture located where at least one hole is to be formed in said first photoresist layer;

developing said exposed first photoresist layer to remove portions of said first photoresist layer, which are exposed to light to form at least one hole in said first photoresist layer where a first part of a device is to be formed;

performing a first process step through said hole to form a first part of a device in said hole, said first process step selected from the group consisting of ion implantation, etching, and deposition;

oxidizing the surface of said first layer;

applying a second layer of negative photoresist containing imidazole which is at least light transmissive over the entire semiconductor device, parts of said second layer being disposed on said first layer and at least a part thereof being present within said hole;

exposing the device, including said second layer and said remaining first layer to light;

developing said first and second layers with a solvent to remove said first layer and overlying portions of said second layer, leaving portions of said second layer within said hole; and

performing a second process step selected from the group consisting of ion implantation, etching and deposition to form a second part of the device on said exposed surface adjacent said hole;

whereby said first and second parts are self-aligned.

2. A photoresist lift-off process for fabricating semiconductor devices comprising the steps of:

applying a first layer of positive photoresist on the surface of a semiconductor substrate;

exposing said first photoresist layer to light through a mask having at least one aperture located where at least one hole is to be formed in said first photoresist layer;

developing said exposed first photoresist layer to remove portions of said first photoresist layer which are exposed to light to form at least one hole in said first photoresist layer where a first part of a device is to be formed, said hole having sidewall angles in the range 80 to 110 degrees;

performing a first process step through said hole to form a first part of a device in said hole, said first process step selected from the group consisting of ion implantation, etching, and deposition;

oxidizing the surface of said first layer;

applying a second layer of negative photoresist containing imidazole which is at least light transmissive over the entire semiconductor device, parts of said second layer being disposed on said first layer and at least a part thereof being present within said hole, the sidewall angles of said second layer being complementary to the hole in which it was deposited, the total angle being 180 degrees;

exposing the device, including said second layer and said remaining first layer to light;

developing said first and second layers with a solvent to remove said first layer and overlying portions of said second layer, leaving portions of said second layer within said hole; and

performing a second process step selected from the group consisting of ion implantation, etching and deposition to form a second part of the device on said exposed surface adjacent said hole;

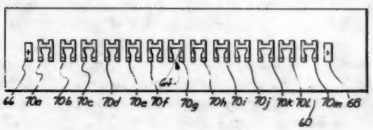
whereby said first and second parts are self-aligned.

4,564,585

PROCESS FOR FABRICATING NEGATIVE PRESSURE SLIDERS

Paul S. Blaske, Maple Grove; Larry D. Zimmerman, Apple Valley; Arthur Calderon, Minnetonka, and Leroy L. Longworth, Buffalo, all of Minn., assignors to Magnetic Peripherals, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 555,763, Nov. 28, 1983, abandoned. This application Nov. 13, 1984, Ser. No. 671,062
Int. Cl.[4] G03C 5/00
U.S. Cl. 430—313 **4 Claims**



1. A process for forming on each air bearing surface carried on a bar from which a plurality of air bearing sliders can be sawn each having a magnetic head whose pole tip projects to the air bearing surface of the slider and has a predetermined position therein, a negative pressure cavity of predetermined shape and having a predetermined position spaced apart from and with respect to the pole tip in the slider's air bearing surface, comprising the steps of:

(a) applying a layer of transparent negative photoresist material to said air bearing surfaces including the pole tips, said photoresist material having resolving ability only for lines greater than a preselected width; then

(b) positioning adjacent to the air bearing surfaces a mask having a pattern of apertures defining the entire portions of the air bearing surfaces surrounding the negative pres-

sure cavities, at least two of said apertures having within them at predetermined locations alignment marks comprising opaque lines of width less than the preselected width, said positioning step including positioning the mask with the alignment marks in a predetermined spatial relationship with the pole tips in the air bearing surfaces thereby positioning the opaque areas of the mask to define on the air bearing surfaces the positions to be occupied by the negative pressure cavities; then

(c) photographically exposing the photoresist material using light shining through the mask, to create therein a pattern of unexposed photoresist material corresponding to the predetermined shape and position of the negative pressure cavities; then

(d) removing the mask; then

(e) developing the photoresist to remove unexposed areas of it by washing with a solvent dissolving unexposed areas; and then

(f) ion milling the air bearing surfaces to create the negative pressure cavities.

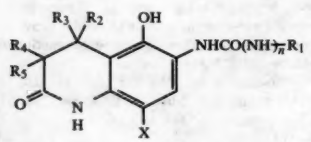
4,564,586

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Kozo Aoki; Michio Ono, and Kiyoshi Nakazyo, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 30, 1985, Ser. No. 696,610
Claims priority, application Japan, Jan. 31, 1984, 59-15502
Int. Cl.[4] G03C *7/26*
U.S. Cl. 430—505 **18 Claims**

1. A silver halide photographic light-sensitive material comprising a support having coated thereon at least one silver halide emulsion layer, wherein the silver halide color photographic light-sensitive material contains a cyan dye forming coupler represented by the following general formula (I):



(I)

wherein R_1 represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group or a substituted or unsubstituted heterocyclic group; R_2, R_3, R_4 and R_5, which may be the same or different, each represents a hydrogen atom, a halogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aryloxy group, a substituted or unsubstituted alkylthio group, a substituted or unsubstituted arylthio group, a substituted or unsubstituted acylamino group, a substituted or unsubstituted sulfonamido group, a substituted or unsubstituted alkoxycarbonyl group, a substituted or unsubstituted arylcarbonyl group, a substituted or unsubstituted carbamoyl group or a nitrile group or R_2 and R_3 or R_4 and R_5 may together represents an alkylidene group, R_2, R_3, R_4 and R_5 may combine together to form a ring, three or more of R_2, R_3, R_4 and R_5 are not hydrogen atoms at the same time and when two of R_2, R_3, R_4 and R_5 are hydrogen atoms at the same time, R_2, R_3, R_4 and R_5 combine together to form a ring or R_2 and R_3 or R_4 and R_5 are hydrogen atoms; X represents a hydrogen atom or a group capable of being released upon oxidative coupling with a developing agent; and n represents 0 or 1.

4,564,587

LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL COMPRISING MULTI-SILVER HALIDE EMULSION LAYERS HAVING SAME COLOR SENSITIVENESS BUT DIFFERENT IN SENSITIVITIES

Yoshikazu Watanabe, and Kenji Ito, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1984, Ser. No. 629,361
Claims priority, application Japan, Jul. 20, 1983, 58-133491
Int. Cl.[4] G03C *1/08, 1/46*
U.S. Cl. 430—505 **18 Claims**

1. A light-sensitive silver halide color photographic material comprising at least one light-sensitive layer, which is constituted of a plurality of silver halide emulsion layers having substantially the same color sensitiveness but being different in sensitivities and contains a dye image-forming coupler, provided by coating on a support, said material being constituted so as to satisfy the four requirements as specified below:

(a) said plurality of silver halide emulsion layers in said light-sensitive layer are provided by coating in the order from the support side, a low sensitivity silver halide emulsion layer, medium sensitivity silver halide emulsion layer and high sensitivity silver halide emulsion layer;

(b) a non-sensitive intermediate layer is provided by coating between said low sensitivity silver halide emulsion layer and said medium sensitivity silver halide emulsion layer;

(c) the density of a dye image-forming coupler in said medium sensitivity silver halide emulsion layer is 10 to 60% of the density of the dye image forming coupler in said low sensitivity silver halide emulsion layer; and

(d) the maximum color-formed density (D) in said medium sensitivity silver halide emulsion layer is $0.6 < D < 1.2$.

4,564,588

SILVER HALIDE PHOTOGRAPHIC MATERIAL FOR RADIOGRAPHY

Eiichi Sakamoto, Hanno; Mikio Kawasaki, Hino; Kouji Ono, Mizuho, and Tomomi Yoshizawa, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 455,263, Jan. 3, 1983, abandoned. This application Feb. 6, 1985, Ser. No. 698,746
Claims priority, application Japan, Jan. 12, 1982, 57-3767
Int. Cl.[4] G03C *1/36, 1/84*
U.S. Cl. 430—509 **6 Claims**

1. A silver halide photographic material for radiography comprising a transparent support having a hydrophilic colloid layer coated on each side thereof, said layer comprising

(a) photosensitive silver halide grains,

(b) silver halide grains whose surface is covered with a solubility reducing agent and which, in the absence of said solubility reducing agent, are more soluble in a material capable of dissolving silver halide than said (a),

said (b) having a sensitivity to light generally less than 1/10th that of said (a), and

(c) physical development nuclei,

wherein the molar ratio of (a) to (b), based on the silver content of each, is between 1:0.1 to 1:0.8 on each side of said support and the total silver content of (a) and (b) is from 1 to 8 g/m^2.

4,564,589

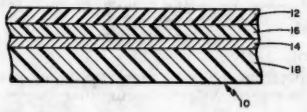
IMAGE-FORMING COMPOSITE WITH FILM

Robert W. Hallman, Poway; Eugene L. Langlais, San Diego, and Patrick G. Warner, Escondido, all of Calif., assignors to Advanced Imaging Systems Ltd., Poway, Calif.

Filed Feb. 6, 1984, Ser. No. 577,536
Int. Cl.[4] G03C *1/82*
U.S. Cl. 430—524 **11 Claims**

1. A photo reproduction composite graphic arts intermediate lith film comprising a support base carrying:

a. a spectrally reflective layer and a light-blocking non-reflective dyed or pigmented secondary layer, said layers having a combined optical density of at least 2.0; and
b. an overlying non-silver subtractive positive or negative working photosensitive layer;



the conjunction of said reflective layer and said secondary layer preventing significant pinhole light leakage through said composite and providing adequate optical density with reduced combined layer thickness.

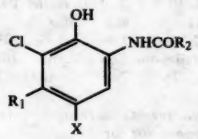
4,564,590

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Masao Sasaki; Toyoki Nishijima; Shun Takada; Takashi Kadowaki, and Kaoru Onodera, all of Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

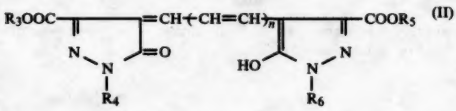
Filed Mar. 19, 1985, Ser. No. 713,474
Claims priority, application Japan, Mar. 29, 1984, 59-62886
Int. Cl.[4] G03C *7/26*
U.S. Cl. 430—551 **6 Claims**

1. A silver halide photographic material having one or more silver halide emulsion layers formed on a reflective support, wherein at least one of said silver halide emulsion layers contains at least one cyan coupler of formula (I) dispersed therein with the aid of at least one high-boiling organic solvent having a dielectric constant of 6.1 or more, and wherein at least one photographic layer contains at least one dye of formula (II) and/or formula (III):



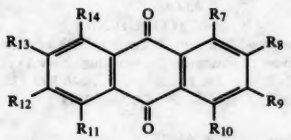
(I)

(wherein R_1 is a straight- or branched-chain alkyl group having 2 to 4 carbon atoms; R_2 is a ballast group; and X is a hydrogen atom or a group capable of leaving upon coupling reaction with the oxidized product of a color developing agent);



(II)

(wherein R_3 and R_5 are each a hydrogen atom, an alkyl group or an aryl group; R_4 and R_6 are each an aryl group or a hetero ring having at least one sulfonic acid group or carboxyl group either directly of via an alkylene group having 1 to 4 carbon atoms; and n is an integer of 0, 1 or 2);



(III)

[wherein R_7, R_{10}, R_{11} and R_{14} are each a hydrogen atom, a hydroxyl group, —OR (wherein R is alkyl or aryl),

(wherein R' and R'' are each a hydrogen atom or an alkyl or aryl group having at least one sulfonic acid group or carboxyl group); R_8, R_9, R_{12} and R_{13} are each a hydrogen atom, a sulfonic acid group, a carboxyl group, or an alkyl or aryl group having at least one sulfonic acid group or carboxyl group].

4,564,591

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Shigeo Tanaka, and Kaoru Onodera, both of Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 446,162, Dec. 1, 1982, abandoned. This application Mar. 21, 1985, Ser. No. 715,035
Claims priority, application Japan, Dec. 2, 1981, 56-194782
Int. Cl.[4] G03C *1/02, 1/28*
U.S. Cl. 430—567 **12 Claims**

1. A silver halide color photographic material comprising a support and an emulsion layer coated thereon, said emulsion layer comprising silver halide grains having silver halide core particles and a silver halide coating layer, said silver halide coating layer comprising at least 60 mol % silver bromide, and said silver halide core particles having a high chloride content, and wherein silver chloride comprises 90 to 99.5 mol % and silver bromide comprises 0.5 to 10 mol % of all of the silver halide present in said silver halide grains.

4,564,592

TOXOPLASMOSIS FACTOR AND PRODUCTION OF SAME

Hassan A. Gaafar, Voorheesville, and Brian G. Grimwood, Delmar, both of N.Y., assignors to Research Corporation, New York, N.Y.

Filed Jan. 21, 1983, Ser. No. 460,057
Int. Cl.[4] C12P *21/00;* **A61K** *39/002*
U.S. Cl. 435—68 **3 Claims**

1. The method of preparing *Toxoplasma gondii* toxofactor (TF) the active immunogen of which is a glycoprotein in nature and has the following characteristics:
(a) is partially inactivated by heating at about 56° C. for about 30 minutes and completely inactivated by boiling for 1 hour;
(b) is inactivated at extreme of pH values of 2 and 12 but is more stable at a pH of 5 to 8;
(c) is partially inactivated when incubated with trypsin;
which is useful in protecting mammals from congential toxoplasmosis;
which comprises serially passing *Toxoplasma gondii* trophozoites in the peritoneal cavity of mice, aseptically isolating such infected peritoneal fluid, inoculating cell cultures with said fluid; propogating said trophozoites in a culture medium in vitro, harvesting the trophozoites and recovering a highly immunogenic toxplasmosis factor (TF) from the medium.

4,564,593

MESSENGER RNA, PRODUCTION AND USE THEREOF

Kyozo Tsukamoto, Toyonaka; Shuji Hinuma, Suita, and Haruo Onda, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 22, 1982, Ser. No. 452,282

Claims priority, application Japan, Dec. 28, 1981, 56-215723

Int. Cl.[4] C12P *19/34;* C07H *17/00;* C12N *15/00, 5/00*

U.S. Cl. 435—91 6 Claims

1. A culture of cells containing exogenous messenger RNA isolated from human cells which has a sedimentation coefficient of 85 to 155 and which codes for human Interleukin 2.

2. Substantially pure messenger RNA isolated from human cells, which has a sedimentation coefficient of 8S to 15S and which codes for human Interleukin 2.

4. A method of producing messenger RNA isolated from human cells, the messenger RNA having a sedimentation coefficient of 8S to 15S and coding for human Interleukin 2, which comprises growing human Interleukin 2-producing lymphocytic cells isolated from human peripheral blood, in a medium for animal cell culture containing lectin and phorbol ester as an inducer, at 30° to 40° C., by spinner culture, for about 5 to 80 hours, to cause formation and accumulation of the messenger RNA in the cells, harvesting the grown cells by centrifugation, homogenzing the resulting cells in the presence of buffer containing thiocyanate and mercapto-alkanol, centrifuging the homogenate in the presence of cesium chloride, precipitating RNA from the resulting supernatant by adding sodium chloride and lower alkanol, and purifying the RNA by oligo (dT)-cellulose column chromatography and sucrose density gradient centrifugation.

6. The process of producing cDNA coding for human Interleukin 2 comprising contacting messenger RNA isolated from human cells and coding for human Interleukin 2 with reverse transcriptase for a time and under conditions sufficient to form said cDNA.

4,564,594

FERMENTATION PROCESS FOR PRODUCTION OF CARBOXYLIC ACIDS

Israel Goldberg, Jerusalem, Israel, and Barry Stieglitz, Overbrook Hills, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 30, 1983, Ser. No. 509,701

Int. Cl.[4] C12P *7/56, 7/40, 7/44, 7/48, 7/46, 1/02, 1/845, 1/38*

U.S. Cl. 435—139 12 Claims

1. In a process for producing carboxylic acids selected from the group consisting of fumaric acid, succinic acid, malic acid, lactic acid, and mixtures thereof, by growing fungi of genus Rhizopus in a growth medium comprising a carbon source, a nitrogen source, and inorganic salts until said carboxylic acids are formed, the improvement which comprises growing said fungi in the presence of at least one growth medium additive selected from the group consisting of

(1) fatty acid esters having fatty acid residues of 12 to 24 carbons, and

(2) triglyceride mixtures wherein the triglyceride mixture is selected from the group consisting of corn oil, soybean oil, cottonseed oil, coconut oil, palm oil, peanut oil, olive oil, safflower oil and sunflower oil,

wherein the growth medium additive is present at a concentration effective to increase production and to facilitate excretion of said carboxylic acids.

4,564,595

ALCOHOL MANUFACTURING PROCESS

Alan M. Neves, Ogden, Utah, assignor to Biomass International Inc., Ogden, Utah

Continuation of Ser. No. 195,326, Oct. 20, 1980, Pat. No. 4,425,433, which is a continuation-in-part of Ser. No. 88,196, Oct. 23, 1979, abandoned. This application Jan. 9, 1984, Ser. No. 569,562

Int. Cl.[4] C12P *7/08*

U.S. Cl. 435—163 13 Claims

1. A process for the conversion of cellulosic material into fermentable sugars, the process consisting essentially of the following steps:

obtaining a feedstock, at least a portion of which is a cellulosic material;

contacting the cellulosic material with a concentrated delignifying acid said concentrated delignifying acid being in a liquid phase and having a temperature of less than about 60° F. and having a concentration of from about 60% to about 90% acid by volume, thereby producing a cellulose-containing solution and a solid residue;

removing the solid residue from the cellulose-containing solution;

precipitating cellulose from the cellulose-containing solution; and

hydrolyzing the precipitated cellulose with a dilute hydrolyzing acid, thereby producing fermentable sugars.

4,564,596

UROKINASE DERIVATIVES COVALENTLY BOUND TO FIBRINOGEN

Alexandr V. Maximenko, Proezd Karamzina, 1, korpus 3, kv. 59; Elena G. Tischenko, ulitsa Eniseiskaya, 15, kv. 25; Vladimir P. Torchilin, Rostovskaya naberezhnaya, 1, kv. 90; Vladimir N. Smirnov, Juzhinsky pereulok, 3, kv. 7, and Evgeny I. Chazov, 3 Cherepkovskaya, 15a, all of Moscow, U.S.S.R.

PCT No. PCT/US84/00008, § 371 Date Jan. 3, 1985, § 102(e) Date Jan. 3, 1985, PCT Pub. No. WO84/04536, PCT Pub. Date Nov. 22, 1984

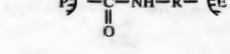
PCT Filed Mar. 1, 1984, Ser. No. 705,343

Claims priority, application U.S.S.R., May 10, 1983, 3590957

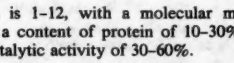
Int. Cl.[4] C12N *9/72, 11/02;* A61K *37/48*

U.S. Cl. 435—177 7 Claims

1. Urokinase derivatives comprising urokinase covalently bonded with fibrinogen or urokinase covalently bonded, through an aliphatic diamine, with fibrinogen of the general formula:



wherein P is fibrinogen, E is urokinase, R is either a single bond or stands for



wherein n is 1-12, with a molecular mass of 360,000 to 440,000D, a content of protein of 10-30% by mass, and an esterase catalytic activity of 30-60%.

4,564,597

ANTI-SM HYBRIDOMA

Ethan A. Lerner, and Michael R. Lerner, both of New Haven, Conn., assignors to Research Corporation, New York, N.Y.

Filed Mar. 18, 1981, Ser. No. 244,899

Int. Cl.[4] G01N *33/54, 33/56;* C12N *5/00*

U.S. Cl. 435—7 11 Claims

1. A continuous cell line which produces anti-Sm antibodies of the IgG class in vitro in hypoxanthine-aminopterin-thymi-

dine medium and comprises a fused cell hybrid of cells from the spleen or lymph node of mice manifesting a lupus erythematosus-like syndrome and myeloma cells from mice or rats.

3. Murine monoclonal anti-Sm antibodies of the IgG2a class characterized by reacting specifically with Sm antigen and the ability to precipitate the small nuclear ribonucleic acids U1, U2, U4, U5 and U6.

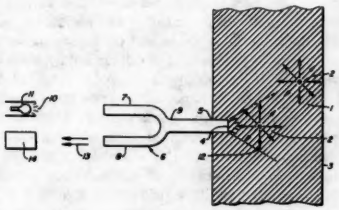
5. A serological method for determining the presence of Sm antibody in human sera which comprises incubating the serum to be tested with an excess of Sm antigen, incubating resulting mixture with labeled monoclonal Sm antibody and determining the extent to which the labeled antibody is inhibited from reacting with the Sm antigen.

4,564,598

LIMITED VOLUME METHOD FOR PARTICLE COUNTING

Jonathan Briggs, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jul. 12, 1982, Ser. No. 397,285
Int. Cl.[4] G01N *33/54, 21/64, 33/50*
U.S. Cl. 436—501 **11 Claims**



1. A method for determining the presence of an analyte in a sample suspected of containing said analyte, said method comprising

irradiating at least small predetermined effective volume of a particle-containing assay medium containing said sample with excitation light, where at least one of said particles of said medium is fluorescent and wherein said effective sample volume is defined spatially and temporally solely by means of an optical fiber in contact with said medium to have a low probability that its fluorescence intensity will fluctuate substantially from the mean fluorescence intensity value of multiple sample volumes and where the presence of said analyte results in a variation of observed fluctuations in the fluorescent intensity values obtained from a plurality of effective sample volumes of said assay medium,

determining the fluorescent intensity values from a plurality of effective sample volumes employing said optical fiber to receive fluorescent light from said effective sample volumes, and

deriving the amount of analyte in said sample from the number of fluctuations in said fluorescent intensity values from the mean value.

4,564,599

LIPOSOME COMPOSITION FOR LUPUS ASSAY

Andrew S. Janoff, Lawrenceville; Marc J. Ostro, North Brunswick; Allan L. Weiner, Plainsboro, all of N.J.; Gerald Weissmann, New York, N.Y., and James R. Selbold, Piscataway, N.J., assignors to The Lipodome Company, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 410,249, Aug. 23, 1982, and a continuation-in-part of Ser. No. 362,382, Mar. 26, 1982. This application Mar. 24, 1983, Ser. No. 476,495
Int. Cl.[4] G01N *33/564;* **B32B** *5/16, 9/02, 9/04;* **A01N** *25/00;* **A61K** *9/42*
U.S. Cl. 436—507 **46 Claims**

1. A method for detecting SLE antibodies in serum, comprising:

(a) contacting serum, for a period of time at least sufficient to permit equilibration of binding between SLE antibodies and cardiolipin, with liposomes having a multicomponent liposome bilayer comprising a flexible double tailed phosphatidylcholine and cardiolipin in a molar ratio of from about 1:7 to about 7:1, respectively;

(b) exposing said liposomes to conditions which cause destablization of the liposomes in the absence of SLE antibodies and which do not cause destablization of the liposomes in the presence SLE antibodies; and

(c) detecting any destablization of the liposomes,

said method being performed under conditions non-inhibiting to the binding between SLE antibodies and said cardiolipin.

4,564,600

ALLERGENS AND ANTIBODIES FROM ALLERGEN EXTRACTS AND POOLED SERUM

Majid Ali, 19 Edgemont Pl., 07666, and Madhava P. Ramanarayanan, 271 Briarcliffe Rd., both of Teaneck, N.J. 07666

Filed Oct. 26, 1982, Ser. No. 436,660
Int. Cl.[4] A61K *39/00*
U.S. Cl. 436—513 **18 Claims**

1. A method of isolating allergenic components from allergen extracts and of obtaining purified antigen-specific antibodies comprising forming an antigen-specific antibody complex from pooled serum containing said antibodies and pooled material containing said antigen, and separating said complex from said serum and material.

4,564,601

SHAPED POLYCRYSTALLINE SILICON CARBIDE ARTICLES AND ISOSTATIC HOT-PRESSING PROCESS

Jochen Kriegesmann, Durach-Bechen; Klaus Hunold, Kempten; Alfred Lipp, Bad Worishofen; Klaus Reinmuth, Durach, and Karl A. Schwetz, Sulzberg, all of Fed. Rep. of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 396,437, Jul. 8, 1982, abandoned. This application Aug. 29, 1984, Ser. No. 646,022
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1981, 3129633
Int. Cl.[4] C04B *35/56*
U.S. Cl. 501—88 **5 Claims**

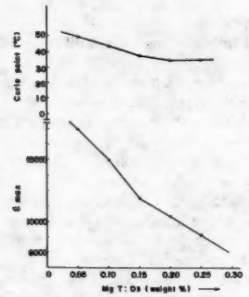
1. A substantially pore-free shaped article consisting essentially of pure polycrystalline α- and/or β-silicon carbide, said article having a total content of metal impurities less than about 0.1% by weight, and having a single-phase homogeneous microstructure with a grain size not exceeding about 8 μm, obtained from pure SiC powder having a total content of metal impurities less than about 0.1% by weight, by isostatic hot-pressing in a vacuum-tight casing at a temperature of from about 1900° C. to 2300° C. and a pressure of from about 100 to 400 MPa (1 to 4 kbar) using an inert gas as a pressure-transfer medium.

4,564,602

HIGH PERMITTIVITY CERAMIC COMPOSITION

Yasuyuki Nakazawa, Yokaichi, and Yoshiharu Kato, Takatsuki, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 28, 1984, Ser. No. 656,148
Claims priority, application Japan, Sep. 29, 1983, 58-182486
Int. Cl.[4] C04B *35/46*
U.S. Cl. 501—137 **13 Claims**



1. A high permittivity ceramic composition having a dielectric constant not less than 9000 and a dielectric loss factor of not more than 2.5% consisting essentially of, by weight, 84.25 to 92.4% of substantially stoichiometric barium titanate; substantially stoichiometric calcium zirconate and substantially stoichiometric calcium stannate, the sum of said calcium zirconate and calcium stannate being 9.5 to 13.5%, the weight ratio of said calcium zirconate to calcium stannate being 1:2.5 to 3:1; 0.05 to 0.25% of substantially stoichiometric magnesium titanate wherein the mole ratio of MgO to TiO_2 is within the range of 0.75 to 1.25; and 0.05 to 2.0% of at least one oxide of rare earth elements.

4,564,603

OXIDATIVE-DEHYDROGENATION CATALYST AND PROCESS

Paul R. Robinson, and Eric L. Moorehead, both of Diamond Bar, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 592,422, Mar. 21, 1984, which is a division of Ser. No. 328,446, Dec. 7, 1981, Pat. No. 4,454,245, which is a continuation-in-part of Ser. No. 595,333, Mar. 30, 1984, which is a division of Ser. No. 335,531, Dec. 29, 1981, Pat. No. 4,455,388, which is a continuation-in-part of Ser. No. 328,446, Dec. 7, 1981, Pat. No. 4,454,245, which is a continuation-in-part of Ser. No. 461,942, Jan. 28, 1983, Pat. No. 4,481,363, which is a division of Ser. No. 289,806, Aug. 3, 1981, Pat. No. 4,388,221, which is a continuation-in-part of Ser. No. 646,291, Aug. 29, 1984, which is a continuation-in-part of Ser. No. 461,942, which is a continuation-in-part of Ser. No. 492,163, May 6, 1983, which is a continuation-in-part of Ser. No. 492,226, May 6, 1983, each is a continuation-in-part of Ser. No. 275,370, Jun. 19, 1981, abandoned. This application Oct. 31, 1984, Ser. No. 667,000
The portion of the term of this patent subsequent to Jun. 12, 2001, has been disclaimed.
Int. Cl.[4] B01J *29/06, 21/08, 27/00*
U.S. Cl. 502—60 **17 Claims**

1. An oxidative dehydrogenation catalyst comprising components of vanadium, phosphorus, and an alkali metal in combination with a microporous crystalline silica or a crystalline zeolite having a silica-to-alumina ratio of at least 6.0.

2. An oxidative dehydrogenation catalyst as defined in claim 1 wherein said catalyst contains a crystalline aluminosilicate zeolite.

11. A catalyst as defined in claim 2 further comprising a tin component.

15. An oxidative-dehydrogenation catalyst comprising components of vanadium, phosphorus, and one or more alkali metals, with the atomic ratio of total alkali metals to phosphorus being above about 0.4:1.0.

4,564,604

CATALYST FOR TREATING WASTE GASES

Kozo Iida, and Yoshiaki Obayashi, both of Kanonshin, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 15, 1984, Ser. No. 671,698
Claims priority, application Japan, Nov. 16, 1983, 58-214028
Int. Cl.[4] B01J *29/08, 29/18, 29/28*
U.S. Cl. 502—64 **4 Claims**

1. A catalyst for treating waste gases comprising nitrogen oxides by a process which comprises adding ammonia to the waste gas and reducing the nitrogen oxides with catalytic ingredients of the catalyst to render the nitrogen oxides into non-noxious compounds, the catalyst comprising a catalytic ingredient for nitrogen oxides and a coating formed on the catalytic ingredient and consisting of a protonized zeolite.

4. The catalyst according to claim 1, wherein said catalytic ingredient is supported on a carrier.

4,564,605

CATALYST AND PROCESS FOR POLYMERIZING OLEFINS

Joelle Collomb-Ceccarini, Marseilles, and Pierre Crouzet, Martigues, both of France, assignors to BP Chemicals Limited, London, England

Filed Nov. 21, 1984, Ser. No. 673,889
Claims priority, application France, Nov. 23, 1983, 83 18624
Int. Cl.[4] C08F *4/64*
U.S. Cl. 502—110 **20 Claims**

1. Process for the preparation of a supported catalyst, the support containing magnesium chloride as a major component and optionally aluminium chloride and occurring in the form of spheroidal particles having a mean diameter by mass comprised between 10 and 100 microns and a particle size distribution such that the ratio of the mean diameter by mass Dm to the mean diameter by number Dn is less than or equal to 3, on which support there is precipitated a metal of a transition compound belonging to Groups IV, V and VI of the Periodic Table of Elements, the process being characterised in that the precipitation is performed by a reduction reaction in two stages of a compound of the said transition metal taken at its maximum valency, the first stage of the reduction reaction being carried out by means of a reducing agent chosen from among alkylaluminium dihalides of the formula $Al(R_8)X_2$ in which R_8 is an alkyl group containing from 2 to 12 carbon atoms and X is a chlorine or bromine atom, the second stage of the reduction reaction being carried out by means of another reducing agent chosen from among the organo-metallic compounds of metals belonging to Groups II and III of the Periodic Table of Elements and having in respect of the compounds of the said transition metals a greater reducing power than that of the alkylaluminium dihalides, the relative molar quantities of the various compounds employed being such that:

- magnesium chloride and the optional aluminium chloride of the support/transition metal compound is comprised between 1 and 50,
- alkylaluminium dihalide used in the first stage of the reduction reaction/transition metal compound, is comprised between 0.2 and 2,
- reducing agent used in the second stage of the reduction reaction/transition metal compound, comprises between 0.1 and 2, at least 10% of the total quantity of the transition metal compound employed reacting in the first stage of the reduction reaction with the alkylaluminium dihalide.

4,564,606

POLYMERIZATION CATALYST, PRODUCTION AND USE

Steven A. Best, Houston, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 6, 1984, Ser. No. 638,167
Int. Cl.[4] C08F *4/62, 4/64, 4/68*
U.S. Cl. 502—117 **41 Claims**

1. A transition metal containing catalyst component comprising the solid reaction product obtained by treating an inert solid support material in an inert solvent sequentially with optionally (A) Cl_2, Br_2, interhalogen or mixtures thereof, (B) an organometallic compound of a Group IIa, IIb or IIIa metal wherein all the metal valencies are satisfied with a hydrocarbon group, (C) an oxygen containing compound selected from ketones, aldehydes, alcohols or mixtures thereof, (D) an acyl halide, (E) at least one transition metal compound of a Group IVb, Vb, VIb or VIII metal, and optionally (F) Cl_2, Br_2, an interhalogen or mixtures thereof with the proviso that the inert solid support material can alternatively be treated with (i) the (B) organometallic compound and the (C) oxygen containing compound simultaneously, (ii) the reaction product of the (B) organometallic compound and (C) oxygen containing compound or (iii) the (C) oxygen containing compound followed by treating with the (B) organometallic compound and at least one of (A) and (F) treatment is performed.

4,564,607

HETEROPOLYACID-TYPE CATALYST COMPOSITION CONTAINING WHISKERS

Tadahiro Yoneda, Ibaraki, and Michio Ueshima, Nishinomiya, both of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co. Ltd., Osaka, Japan

Filed Mar. 21, 1984, Ser. No. 591,835
Claims priority, application Japan, Mar. 24, 1983, 58-47871; Apr. 1, 1983, 58-55150
Int. Cl.[4] B01J *27/20, 27/14, 23/84, 23/08*
U.S. Cl. 502—209 **8 Claims**

1. A catalyst composition having excellent mechanical strength consisting essentially of a compound containing a heteropolyacid aa a base and from about 1 to about 50% by weight of the catalyst composition of whiskers having an average diameter of not more than 5 microns and an average length of not more than 1000 microns.

4,564,608

METHOD OF PRODUCING MONOLITH CATALYSTS

Kazunori Ihara, Iwakuni, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Nov. 22, 1983, Ser. No. 554,449
Claims priority, application Japan, Nov. 29, 1982, 57-210382
Int. Cl.[4] B01J *21/04*
U.S. Cl. 502—355 **1 Claim**

1. A method of producing a monolith catalyst for use in an automobile exhaust system wherein the catalyst has an alumina coat layer capable of withstanding temperatures of about 850° C. or higher without becoming separated, comprising the steps of

(i) adding from about 60 to 120 parts by weight of water with respect to 100 parts by weight of blended dust, which blended dust is provided through the blending of from about 85 to 95% by weight of hydroalumina powder and from about 5 to 15% by weight of aluminum nitrate powder;

(ii) blending and kneading the mixture of water and blended dust;

(iii) adding from about 30 to 70 parts by weight of activated alumina powder with respect to 100 parts by weight of blended dust to the mixture of water and blended dust, and then blending to produce an alumina slurry;

(iv) coating the surface of a cordierite catalyst carrier with the alumina slurry by dipping the cordierite catalyst into the alumina slurry;

(v) drying the cordierite carrier at about 100° to 200° C. for from about 1 to 3 hours; and then

(vi) burning the carrier at a temperature of from about 600° to 800° C. for from about 2 to 5 hours.

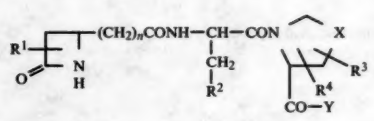
4,564,609

4-SUBSTITUTED-2-AZETIDINONE COMPOUND, PROCESS OF PRODUCING THE COMPOUNDS, AND MEDICAMENTS CONTAINING THE COMPOUNDS

Toshinari Tamura, Tokyo; Hidenori Iwamoto; Makoto Yoshida, both of Saitama, and Minoru Yamamoto, Kanagawa, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

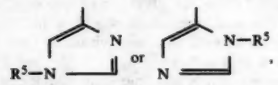
Filed Mar. 23, 1984, Ser. No. 592,866
Claims priority, application Japan, Mar. 25, 1983, 58-48989; Nov. 25, 1983, 58-221469; Nov. 25, 1983, 58-221470
Int. Cl.[4] A61K *37/00*
U.S. Cl. 514—18 **25 Claims**

1. A 4-substituted-2-azetidinone compound of the formula (I)



(I)

wherein R^1, R^3 and R^4, which may be the same or different, each represent a hydrogen atom or a lower alkyl group; R^2 represents an imidazolyl group shown by



wherein R^5 represents a hydrogen atom, a lower alkyl group, an aromatic acyl group, or an aryl group; n represents 0, 1, 2 or 3; X represents a methylene group, an ethylene group, an oxygen atom, or a sulfur atom; and Y represents a hydroxy group, a lower alkoxy group, an aralkoxy group or an unsubstituted or substituted amino group shown by

wherein R^6 and R^7, which may be the same or different, each represents a hydrogen atom, a lower alkyl group, a hydroxy lower alkyl group, a lower alkoxy lower alkyl group, a cycloalkyl group, an aryl group, an amino lower alkyl group or an acyloxy lower alkyl group; said R^6 and R^7 may combine with each other to form, together with the nitrogen atom to which these groups are bonded, a 5-membered or 6-membered ring, which may contain an oxygen atom, a sulfur atom or a nitrogen atom; or a salt thereof.

4,564,610

SUBSTITUTED 5H-PYRIMIDO[5,4-B]INDOLES

Dieter Rahtz; Andreas Huth; Ralph Schmiechen; Dieter Seidelmann; Wolfgang Kehr; Herbert H. Schneider, all of Berlin, Fed. Rep. of Germany, and Claus T. Braestrup, Roskilde, Denmark, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

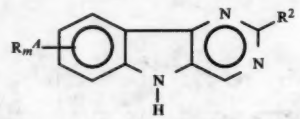
Filed Dec. 16, 1983, Ser. No. 562,248

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1982, 3246932

Int. Cl.[4] A61K *31/505;* **C07D** *487/04*

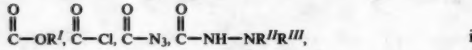
U.S. Cl. 514—80 **20 Claims**

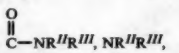
1. A substituted 5H-pyrimido[5,4-b]indole of the formula



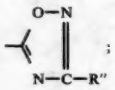
wherein

R_2 is halogen, C_{1-5}-alkyl, cycloalkyl, of 3–7 carbon atoms, aralkyl of 7–11 carbon atoms, aryl of 5–10 carbon atoms, OR^I, SO_nR^I,





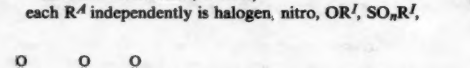
or the oxadiazolyl group



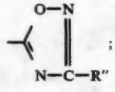
R'' is lower alkyl with up to 3 carbon atoms,

R^{II} and R^{III} each independently is hydrogen, C_{1-5}-alkyl, C_{3-5}-alkenyl, C_{3-7}-cycloalkyl, C_{7-11}-aralkyl, or C_{6-10}-aryl, or together with the connecting N-atom form a 5- or 6-membered heterocyclic ring with 0 or 1 additional hetero atom which is N, O or S;

each R^A independently is halogen, nitro, OR^I, SO_nR^I,



or the oxadiazolyl group



R is C_{1-5}-alkyl:

n is 0, 1 or 2;

R^I is hydrogen, C_{1-5}-alkyl, C_{3-7}-cycloalkyl, C_{7-11}-aralkyl, or C_{6-10}-aryl;

m is 0, 1, 2, 3 or 4.

16. A pharmaceutical composition comprising a psychotropically effective amount of a compound of claim **1** and a pharmaceutically acceptable carrier.

18. A method of achieving a psychotropic effect in a patient in need of such treatment comprising administering to the patient an effective amount of a compound of claim **1**.

4,564,611

(DI)THIO-PHOSPHORIC AND -PHOSPHONIC ACID DERIVATIVES, AND THEIR USE IN PLANT PROTECTION

Gerhard Stähler, Frankfurt am Main; Werner Knauf, Eppstein/-Taunus; Burkhard Sachse, Kelkheim, and Anna Waltersdorfer, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt (Main), Fed. Rep. of Germany

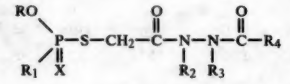
Filed Jul. 28, 1983, Ser. No. 518,295

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1982, 3228631

Int. Cl.[4] A01N *57/20, 57/24;* **C07F** *9/165, 9/40*

U.S. Cl. 514—99 **10 Claims**

1. A compound of the formula I:



in which

R is $(C_1–C_4)$-alkyl,

R_1 is $(C_1–C_4)$-alkylamino or di$(C_1–C_4$-alkyl)-amino,

R_2 is $(C_1–C_4)$-alkyl,

R_3 is H, $(C_1–C_4)$-alkyl, $(C_5–C_6)$-cycloalkyl, benzyl or furylmethyl,

R_4 is $(C_1–C_4)$-alkyl, and

X is oxygen or sulfur.

2. A method for combating harmful insects, acarides or nematodes which comprises applying an effective amount of a compound of claim **1** to the infested plants.

4,564,612

CONDENSED, SEVEN-MEMBERED RING COMPOUNDS AND THEIR USE

Hirosada Sugihara, Osaka; Kohei Nishikawa, Kyoto, and Katsumi Ito, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

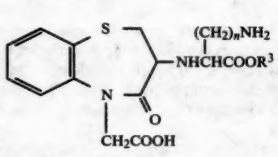
Filed Apr. 11, 1984, Ser. No. 599,187

Claims priority, application Japan, Apr. 22, 1983, PCT/JP83/00127; Oct. 13, 1983, PCT/JP83/00342; Mar. 22, 1984, PCT/JP84/00119

Int. Cl.[4] A61K *31/55;* **C07D** *281/10*

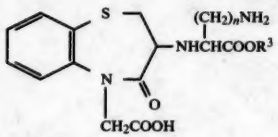
U.S. Cl. 514—211 **9 Claims**

1. A compound of the formula



wherein R^3 is hydrogen or C_{1-4} alkyl and n is 6 or 7, or a pharmaceutically acceptable salt thereof.

9. A method for treatment of hypertension in a mammal, which comprises administering to said mammal an effective antihypertensive amount of a compound of the formula



wherein $R^{3'}$ is hydrogen or C_{1-4} alkyl a nd n is 6 or 7 or a pharmaceutically acceptable salt thereof.

4,564,613

PYRIDOINDOLE DERIVATIVES, COMPOSITIONS AND USE

Karl-Heinz Boltze, Borod; Margaret A. Davies, Cologne; Bodo Junge, Wuppertal; Teunis Schuurman, Overath, and Jörg Traber, Lohmar, all of Fed. Rep. of Germany, assignors to Troponwerke GmbH & Co., Cologne, Fed. Rep. of Germany

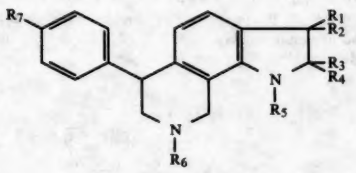
Filed Sep. 14, 1984, Ser. No. 651,001

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1983, 3333994

Int. Cl.[4] A61K *31/44, 31/535;* **C07D** *471/14, 471/04*

U.S. Cl. 514—222 **10 Claims**

1. A pyridoindole of the formula



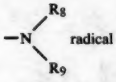
in which

R_1 represents hydrogen or C_1–C_4-alkyl, which is optionally substituted by the radical

R_2 and R_3 represent H or form a bond, or

R_1 and R_2 together represent O, —O—CH_2—CH_2—O— or —S—CH_2—CH_2—S—,

R_4 represents H or the



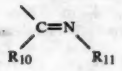
or

R_3 and R_4 represent O, or

R_1 and R_4 are members of an N-containing six-membered ring and

R_8 and R_9 represent H or C_1–C_4-alkyl, or optionally form, with the N atom, a heterocyclic 5-membered or 6-membered ring, which can optionally also contain a further hetero-atom from the series comprising N, O or S,

R_5 represents H, C_1–C_4-alkyl or the group



or

R_5 and R_3 form a bond, and

R_{10} and R_{11} represent C_1–C_4-alkyl or are members of an N-containing 5-membered or 6-membered ring,

R_6 represents H or C_1–C_4-alkyl and

R_7 represents H or halogen or an acid addition salt thereof.

8. A composition active on the central nervous system comprising a central nervous system-output modifying effective amount of a compound or salt according to claim 1 in admixture with a diluent.

4,564,614

ANTIINFLAMMATORY METHODS

Thomas C. Crawford; Stanley L. Keely, both of Ledyard; David L. Larson, East Lyme; Joseph G. Lombardino, Niantic, and James J. Maciejko, Mystic, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 659,602, Oct. 11, 1984, abandoned. This application Jan. 28, 1985, Ser. No. 695,518

Int. Cl.[4] A61K *31/54, 31/435*

U.S. Cl. 514—222 **3 Claims**

1. A method for the treatment of inflammation in a mammal which comprises, in addition to treatment with an antiinflammatory amount of piroxicam or a pharmaceutically acceptable salt thereof, treatment with a gastric antiirritation and ulcer inhibiting amount of pyridoxine or a pharmaceutically acceptable salt thereof.

4,564,615

IMMUNOACTIVATOR

Hideaki Matsuda, Abiko; Ryohta Tatezaki, Yachiyo; Hiroyuki Mizuno, Shisui, and Tatsuhiko Katori, Tone, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 331,760, Dec. 17, 1981, abandoned. This application Nov. 12, 1982, Ser. No. 441,177

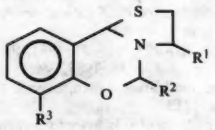
Claims priority, application Japan, Dec. 26, 1980, 55-186145; Oct. 21, 1981, 56-168199

Int. Cl.[4] A61K *31/535*

U.S. Cl. 514—231 **8 Claims**

1. A method of stimulating antibody producing cells in a host having immunological abnormality or deficiency, comprising:

administering to said host an antibody stimulating amount of a compound of the formula:



or salt thereof wherein R^1 is hydrogen, carboxy or lower alkoxycarbonyl; R^2 is phenyl, substituted phenyl, lower alkyl or furyl and R^3 is hydrogen or lower alkoxy.

4,564,616

ANTI-CANCER QUINAZOLINE DERIVATIVES

Terence R. Jones, Sutton; Kenneth R. Harrap, Newdigate, and Alan H. Calvert, London, all of England, assignors to National Research Development Corporation, London, England

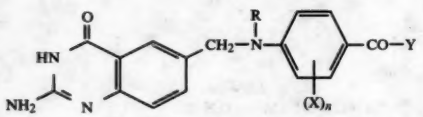
Division of Ser. No. 435,215, Oct. 19, 1982, Pat. No. 4,447,608, which is a continuation of Ser. No. 214,024, Dec. 8, 1980, abandoned. This application Mar. 20, 1984, Ser. No. 591,566

Claims priority, application United Kingdom, Dec. 19, 1979, 7943715; Feb. 28, 1980, 8006813

Int. Cl.[4] A61K *31/505;* **C07D** *239/84*

U.S. Cl. 514—260 **15 Claims**

1. A pharmaceutical composition useful for aiding regression and palliation of cancer, comprising an effective amount of an active compound in association with a pharmaceutically acceptable carrier or diluent wherein the active compound is a compound of formula:



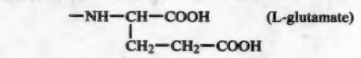
(I)

wherein

R represents a straight or branched chain unsaturated C_2–C_4 hydrocarbon group or a fluorine-substituted straight or branched chain hydrocarbon group having up to 4 carbon atoms;

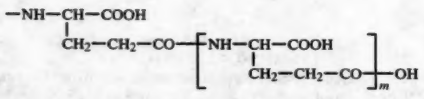
n is 0, 1 or 2;

X, which is linked in a position ortho to the —CO—Y group, represents a halogeno or C_1–C_4 alkyl group, and where two X's are present these may be the same or different; and Y represents a group of formula:



(L-glutamate)

or



wherein m is an integer of 1–9 (poly-L-glutamates); or a pharmaceutically acceptable salt or ester thereof.

4,564,617

THEOPHYLLINE AND THEOBROMINE DERIVATIVES

Hachiro Sugimoto, Kawaguchi; Takaharu Nakamura, Abiko; Sachiyuki Hamazo, Tokyo; Toshiji Igarashi, Saitama; and Yoshiharu Daiku, Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 298,227, Aug. 31, 1981, Pat. No. 4,426,383. This application Apr. 11, 1983, Ser. No. 484,044

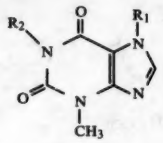
Claims priority, application Japan, Sep. 4, 1980, 55-121712; Sep. 4, 1980, 55-121713

The portion of the term of this patent subsequent to Jan. 17, 2001, has been disclaimed.

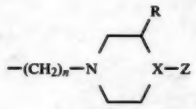
Int. Cl.[4] C07D *473/08;* **A61K** *31/52*

U.S. Cl. 514—265 **14 Claims**

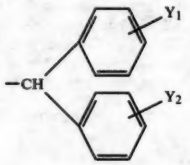
1. A compound having the formula



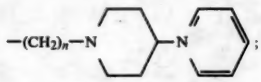
in which one of R_1 and R_2 is methyl and the other of R_1 and R_2 has the formula



wherein R is hydrogen or lower alkyl; Z is pyridyl and or



in which Y_1 and Y_2, which are the same or different, are hydrogen, lower alkyl, lower alkoxy, trifluoromethyl or halogen; X is C; and n is an integer of from 2 to 10; with the proviso that when R_1 is methyl, R_2 is not



or a pharmaceutically acceptable salt thereof.

4,564,618

5-HALOVINYL-2'-DEOXYURIDINE DERIVATIVES

David I. C. Scopes, Hoddesdon; Roger F. Newton, Royston, and Richard C. Cookson, Stratford Tony, all of United Kingdom, assignors to Glaxo Group Limited, England

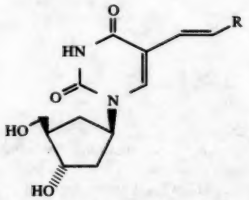
Filed Sep. 16, 1983, Ser. No. 532,859

Claims priority, application United Kingdom, Sep. 17, 1982, 8226515

Int. Cl.[4] A61K *31/505;* **C07D** *239/46*

U.S. Cl. 514—274 **6 Claims**

1. Compounds of formula (I):



(I)

wherein R is a chlorine, bromine or iodine atom and physiologically acceptable salts thereof with bases.

6. A method of treating a patient infected with or susceptible

to infection by a virus which comprises administering to said patient an effective amount of a compound as claimed in claim 1.

4,564,619

CARBOSTYRIL DERIVATIVE

Tatsuyoshi Tanaka, Sapporo; Kazuyoshi Nagami; Shigeharu Tamada, both of Tokushima, and Kazuyuki Nakagawa, Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Japan

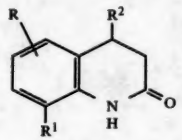
Filed Sep. 2, 1983, Ser. No. 528,887

Claims priority, application Japan, Sep. 3, 1982, 57-154090; Dec. 3, 1982, 57-213167; Jun. 24, 1983, 58-114679

Int. Cl.[4] C07D *215/22;* A61K *31/47*

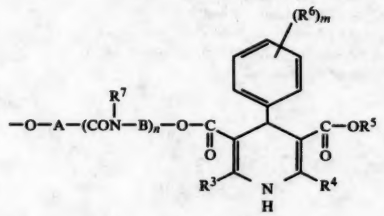
U.S. Cl. 514—312 26 Claims

1. A carbostyril derivative represented by the formula

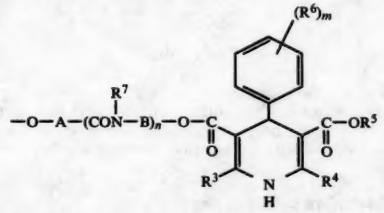


(I)

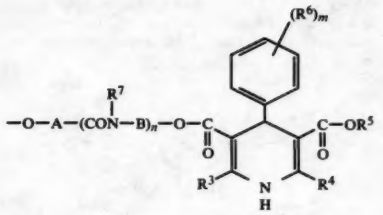
wherein R is a hydrogen atom or a group of the formula



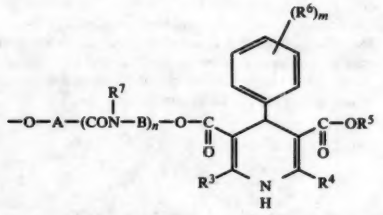
wherein R^3, R^4 and R^5 are each a lower alkyl group; A is a lower alkylene group which may have a hydroxyl group or a lower alkanoyloxy group as a substituent; R^6 is a nitro group, a lower alkyl group which may have a halogen atom as a substituent, a halogen atom, a lower alkoxy group, a lower alkylthio group, a lower alkoxycarbonyl group; R^7 is a lower alkyl group or a cycloalkyl group having 3 to 8 carbon atoms; B is a lower alkylene group; n is 0 or 1; and m is 0 or an integer of 1, 2 or 3, with the proviso that when R^6 is a nitro group, m is 1; R^1 is a hydrogen atom, a hydroxyl group, a lower alkoxy group, a lower alkenyloxy group, a lower alkynyloxy group, a 2-tetrahydropyranyloxy group or a group of the formula



wherein R^3, R^4, R^5, R^6, R^7, A, B, m and n are the same as defined above R^2 is a hydrogen atom, a lower alkyl group or a group of the formula



wherein R^3, R^4, R^5, R^6, R^7, A, B, m and n are the same as defined above; provided that, among R, R^1 and R^2, only one is a group of the formula



wherein R^3, R^4, R^5, R^6, R^7, A, B, m and n are the same as defined above; and the carbon-carbon bond between 3- and 4-positions in the carbostyril skeleton is a single or double bond, or a pharmaceutically acceptable acid addition salt thereof.

26. A pharmaceutical composition for inhibiting platelet aggregation containing a pharmaceutically effective amount of a carbostyril derivative as claimed in claim 1 or a pharmaceutically acceptable acid addition salt thereof as the active ingredient.

4,564,620

5,6,7,-TRINOR-4,8-INTER-M-PHENYLENE PGI_2 DERIVATIVES AND ANTI-ULCER, ANTI-THROMBOTIC AND ANTI-HYPERTENSIVE PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Kiyotaka Ohno, Fujisawa; Hiroshi Nagase; Mamoru Ishikawa, both of Kamakura; Kazuhisa Matsumoto, Fujisawa, and Shintaro Nishio, Ebina, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

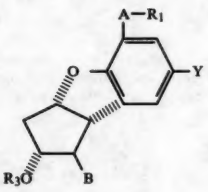
Continuation of Ser. No. 353,875, Mar. 2, 1982, abandoned. This application Jan. 3, 1984, Ser. No. 567,755

Claims priority, application Japan, Mar. 3, 1981, 56-29357

Int. Cl.[4] A61K *31/34;* C07D *307/93*

U.S. Cl. 514—337 36 Claims

1. A 5,6,7-trinor-4,8-inter-m-phenylene PGI_2 derivative represented by the formula

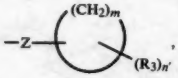


(I)

wherein

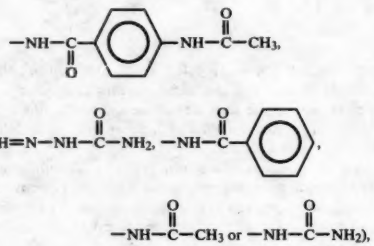
R_1 is a group selected from the class consisting of:

(a) a $COOR_2$, wherein R_2 denotes
(i) hydrogen or a pharmacologically acceptable cation,
(ii) a straight chain alkyl having 1–12 carbon atoms or a branched alkyl having 3–12 carbon atoms,
(iii)



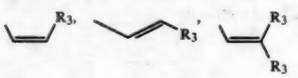
wherein Z denotes valence bond, or straight chain or branched alkylene which may be represented by C_tH_{2t}, wherein t denotes an integer of 1–5, further, m denotes an integer of 5–12, R_3 denotes hydrogen or alkyl having 1–5 carbon atoms, and n′ denotes an integer of 1–3,
(iv) $—(CH_2CH_2O)_lCH_3$ wherein l is an integer of 1–5,
(v) —Z—Ar_1, wherein Z is the same as defined above, Ar_1 denotes phenyl, α-naphthyl, β-naphthyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, α-furyl, β-furyl, α-thienyl, β-thienyl or substituted phenyl (wherein the substituent is at least one chlorine, bromine, fluorine, trifluoromethyl, alkyl having 1–4 carbon atoms,

nitro, methoxy, phenyl, phenoxy,



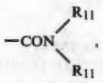
(vi) $—C_lH_{2l}COOR_3$
(vii) $—CH_2C_lH_{2l}N(R_3)_2$ (wherein l and R_3 are the same as defined above),
(viii)

wherein R_4 *L denotes hydrogen or benzoyl and R5* denotes phenyl, p-bromophenyl, p-biphenyl, p-benzamidophenyl or 2-naphthyl,
(ix) $—C_pH_{2p}—B'$, wherein B′ is

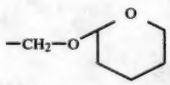


or —C≡C—R_6, wherein R_3 is the same as defined above, R_6 denotes straight chain or branched alkyl having 1–30 carbon atoms, and p is an integer of 1–5, or
(x)

wherein R_7 denotes alkyl or acyl having 1–30 carbon atoms,
(b) $—CH_2OH$,
(c)

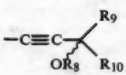


wherein R_{11} denotes hydrogen, alkyl having 1–10 carbon atoms, cycloalkyl having 3–12 carbon atoms, phenyl, substituted phenyl, aralkyl having 7–12 carbon atoms or $—SO_2R_{12}$, wherein R_{12} denotes alkyl having 1–10 carbon atoms, cycloalkyl having 3–12 carbon atoms, phenyl, substituted phenyl or aralkyl having 7–12 carbon atoms, the two R_{11} may be the same or different, however, when one denotes $—SO_2R_{12}$, the other is not $—SO_2R_{12}$, and
(d)



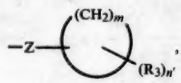
A denotes
(i) $—(CH_2)_n—$,
(ii) —CH=CH—CH_2—,
(iii) —CH_2CH=CH— or
(iv) —CH_2—O—CH_2—,
wherein n is an integer of 1–3
Y denotes hydrogen, alkyl having 1–4 carbon atoms, chlorine, fluorine, bromine, formyl, methoxy or nitro,
B denotes to all A and Y
(i)

or
(ii)



further, when A is (ii) —CH=CH—CH_2—, (iii) —CH_2CH=CH—, (iv) —CH_2O—CH_2— or when Y is an alkyl group having 2–4 carbon atoms, chlorine, fluorine, bromine, formyl, methoxy or nitro, B further denotes
(iii)

wherein R_9 denotes hydrogen or alkyl group having 1–4 carbon atoms, R_8 denotes hydrogen, acyl having 1–12 carbon atoms, aroyl having 6–15 carbon atoms, tetrahydropyranyl, tetrahydrofuranyl, 1-ethoxy ethyl or t-butyl,
X denotes
(i) $—CH_2CH_2—$,
(ii) —CH=CH— (trans) or
(iii) —C≡C—
R_{10} denotes
(i) straight chain alkyl having 4–10 carbon atoms, or
(ii)



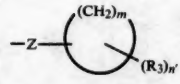
wherein Z, m, R_3 and n' are the same as defined above, or

(iii) —Z—Ar_2, wherein Z is the same as defined above, and Ar_2 denotes phenyl, α-naphthyl, β-naphthyl or at least one chlorine, bromine, fluorine, trifluoromethyl, alkyl having 1–4 carbon atoms, nitro, methoxy, phenyl or phenoxy-substituted phenyl,

R_{13} denotes

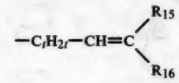
(i) branched alkyl having 5–10 carbon atoms, or

(ii) —$C_tH_{2t}OR_{14}$, wherein C_tH_{2t} is the same as defined above, and R_{14} denotes straight chain or branched alkyl having 1–5 carbon atoms,



or —Z—Ar_2, wherein Z, m, R_3, n' and Ar_2 are the same as defined above, or

(iii)



wherein C_tH_{2t} is the same as defined above, R_{15} and R_{16} denote hydrogen, methyl, ethyl, propyl or butyl group,

W denotes

(i) —CH_2CH_2— or

(ii) —CH=CH— (trans)

and the general formula denotes d form, l form or dl form.

33. A pharmaceutical composition for use as an anti-ulcer agent comprising a pharmaceutically acceptable carrier and a PGI_2 derivative of claim **1** in sufficient amount to provide from about 0.01 to about 100 mg of said PGI_2 derivative per dose.

4,564,621

α-ARYL-α-PYRIDYLALKANOIC ACID DERIVATIVES, PROCESS FOR PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Ikuo Ueda, Toyonaka; Masanobu Nagano, Suita, and Atsushi Akahane, Ikeda, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

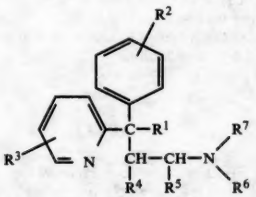
Filed Sep. 23, 1983, Ser. No. 535,298

Claims priority, application Japan, Sep. 30, 1982, 57-172936

Int. Cl.⁴ C07D *213/38*; A61K *31/44*

U.S. Cl. 514—357 **5 Claims**

1. α-Aryl-α-pyridylalkanoic acid compounds of the formula:



wherein

R^1 is carbamoyl,

R^2 is hydrogen or halogen,

R^3 is hydrogen or lower alkyl,

one of R^4 and R^5 is hydrogen and another is lower alkyl,

R^6 is lower alkyl, and

R^7 is lower alkyl,

and salts thereof.

4,564,622

TRIAZOLE DERIVATIVE AS AN ANTIVIRAL AGENT

Gert Streissle, Wuppertal; Manfred Plempel; Arnold Paessens, both of Haan; Graham Holmwood, Wuppertal, and Karl H. Büchel, Burscheid, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 536,409, Sep. 27, 1983, abandoned. This application Apr. 29, 1985, Ser. No. 728,061

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1982, 3238903

Int. Cl.⁴ A61K *31/41*

U.S. Cl. 514—383 **5 Claims**

1. A method for treating a warm-blooded animal suffering from the effects of herpes simplex virus or cytomegalo virus which comprises administering to said warm-blooded animals an effective anti-herpes simplex or an effective anti-herpes cytomegalo amount of 2-(4-chlorophenoxymethyl)-3,3-dimethyl-1-(1,2,4-triazol-1-yl)-2-butanol.

4,564,623

AMINOALKYLBENZENE DERIVATIVES

Kentario Hirai, Kyoto; Teruyuki Ishiba; Shigeru Matsutani, both of Osaka; Itsuo Makino, Hyogo; Toshio Fujishita, Osaka, all of Japan; Masami Doteuchi, Noordwyrerhout, and Koichi Otani, Voorgerg, both of Netherlands, assignors to Shionogi & Co., Ltd., Osaka, Japan

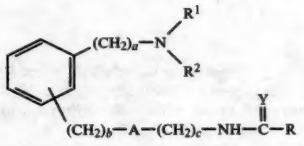
Division of Ser. No. 277,161, Jun. 25, 1981, Pat. No. 4,482,566, which is a division of Ser. No. 164,016, Jun. 30, 1980, Pat. No. 4,309,433. This application Jan. 25, 1984, Ser. No. 573,685

Claims priority, application Japan, Jul. 3, 1979, 54-84801

Int. Cl.⁴ A01K *31/40*; C07D *257/04, 207/04*

U.S. Cl. 514—408 **9 Claims**

1. A compound of the formula:



wherein

A is oxygen or sulfur,

Y is oxo or thioxo,

a is an integer of 1 to 3,

b is an integer of 0 to 3,

c is an integer of 1 to 4,

R^1 and R^2 taken together represent pyrrolidinyl, and

R is phenyl or benzoly wherein the phenyl or benzolyl are unsubstituted or substituted by 1 to 3 substituents selected from the group consisting of hydroxy, halogen, amino, nitro, cyano, carboxy, carbamoyl, sulfamoyl, C_1—C_5 alkyl, C_1—C_5 alkoxy, C_2—C_6 alkoxy carbonyl, C_2—C_6 dialkylamino, C_1—C_5 alkanoylamnino and tetrazolyl, or a pharmaceutically acceptable acid addition salt thereof.

8. A pharmaceutical composition for use in the treatment of patients suffering from peptic ulcer which comprises a pharmaceutically effective amount of a compound or salt of claim **1** and an inert pharmaceutical carrier or diluent therefor.

9. A method for the treatment of peptic ulcer which comprises administering enterally or parenterally a pharmaceuti-

cally effective amount of composition of claim 8 to a patient suffering from peptic ulcer.

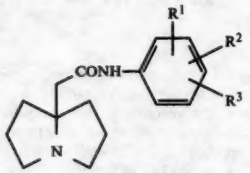
4,564,624

8-(SUBSTITUTED N-PHENYLCARBOXAMIDOMETHYL) PYRROLIZIDINES AND USE THEREOF AS ANTIARRHYTHMICS

Seiji Miyano, Fukuoka; Kunihiro Sumoto, Ohnojo; Minoru Morita, Minoo, and Fumio Sato, Nagaokakyo, all of Japan, assignors to Suntory Ltd., Osaka, Japan

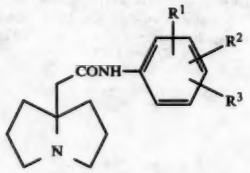
Filed Mar. 10, 1983, Ser. No. 473,947
Claims priority, application Japan, Mar. 16, 1982, 57-42297
Int. Cl.[4] A61K *31/40*; C07D *487/04*
U.S. Cl. 514—413 8 Claims

1. An 8-substituted pyrrolizidine compound of the formula:



wherein R^1 stands for hydrogen or a lower alkyl group, R^2 stands for hydrogen, a lower alkyl group, a lower alkoxy group or halogen, and R^3 stands for a lower alkyl group, a lower alkoxy group, amino group or halogen.

6. An antiarrhythmic composition comprising a pharmaceutically acceptable carrier and a pharmaceutically effective amount of an 8-substituted pyrrolizidine compound of the formula:



wherein R^1 is hydrogen or a lower alkyl group, R^2 is hydrogen, a lower alkyl group, a lower alkoxy group or halogen, and R^3 is a lower alkyl group, a lower alkoxy group, amino group or halogen.

7. A method for the treatment of arrhythmia which comprises administering a pharmaceutically effective amount of the composition of claim 6.

4,564,625

BINARY COMPOSITIONS OF PENBUTOLOL AND FUROSEMIDE OR PIRETANIDE

Roman Muschaweck, Frankfurt am Main; Werner Fülberth, Kelkheim, and Alfred Sickmüller, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 279,736, Jul. 2, 1981, abandoned. This application May 10, 1984, Ser. No. 608,915
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1980, 3025367
Int. Cl.[4] A61K *31/135*
U.S. Cl. 514—429 4 Claims

1. A composition comprising the two components
(a) furosemide or piretanide and
(b) penbutolol,
in a ratio by weight of (a):(b) of 1:2.

4,564,626

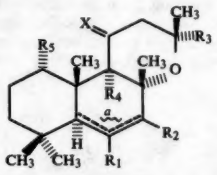
METHODS OF INDUCING BRONCHODILATION

William Kreutner, West Caldwell, and Marvin I. Siegel, Florham Park, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Apr. 1, 1983, Ser. No. 481,503
Int. Cl.[4] A61K *31/35, 31/38*
U.S. Cl. 514—430 2 Claims

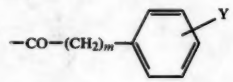
1. A method for inducing bronchodilation in a mammal which comprises administering:

(a) a subthreshold bronchodilating effective amount of forskolin or a forskolin derivative chosen from those having the structural formula I,



I

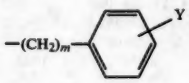
wherein R_1 and R_2 may be the same or different and are =O, H, or OR_{11} wherein R_{11} is H, carboxylic acyl having from 1 to 6 carbon atoms or



wherein m is 0, 1, 2 or 3 and Y is hydrogen, halogen, alkyl having from 1 to 6 carbon atoms, alkoxy having from 1 to 6 carbon atoms, alkylthio having from 1 to 6 carbon atoms, OH, CF_3, NO_2, CN, phenyl, benzyl, phenoxy or NR_aR_b wherein R_a and R_b are the same or different and are H or alkyl having from 1 to 6 carbon atoms;

R_1 and R_2 when together may form

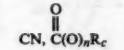
wherein R_{13} and R_{14} may be the same or different and are H, alkyl having from 1 to 6 carbon atoms, alkenyl having from 2 to 6 carbon atoms, alkynyl having from 2 to 6 carbon atoms or



wherein m and Y are defined above;

R_3 is hydrogen; alkyl having from 1 to 10 carbon atoms; CH_2OH; CHO; CO_2R_{15} wherein R_{15} is H or alkyl having from 1 to 6 carbon atoms;

—CH=$CR_{16}R_{17}$ wherein R_{16} is H, halogen, alkyl having from 1 to 6 carbon atoms,



wherein n is O or 1 and R_c is H, alkyl having from 1 to 6 carbon atoms, 1 phenyl or benzyl, $CHOHR_c$ or $C(OR_d)_2R_c$ wherein R_c is defined above and R_d is alkyl

having from 1 to 6 carbon atoms, R_{17} is H, alkyl having from 1 to 6 carbon atoms, alkoxy having from 1 to 6 carbon atoms, benzyl, phenyl or halogen;

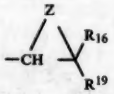
—C≡C—R_{18} wherein R_{18} is H, alkyl having from 1 to 12 carbon atoms, alkoxy having from 1 to 6 carbon atoms or

wherein Y is defined above;

—CHOH—C≡C—R_{19} wherein R_{19} is H, alkyl of from 1 to 6 carbon atoms, phenyl or benzyl;

—CH=C=CHR_{19} wherein R_{19} is defined above;

—CH=N—OR_{19} wherein R_{19} is defined above;



wherein Z is O or S, and R_{16} and R_{19} are defined above;

—CH$(ZR_{20})_2$ wherein Z is defined above and R_{20} is alkyl having from 1 to 6 carbon atoms, phenyl, benzyl or the two groups R_{20} may together form —$(CH_2)1_p$—wherein p is 2 or 3;

wherein A and B are H, halogen, alkyl having from 1 to 6 carbon atoms, phenyl, benzyl or

wherein n and R_c are defined above;

—CH=N—NDE wherein D and E are H, alkyl having from 1 to 6 carbon atoms, benzyl, phenyl, CoG, SO_2G wherein G is alkyl having form 1 to 6 carbon atoms, benzyl or phenyl;

R_4 is H or OH;

R_5 is OH; or when

R_4 and R_5 are taken together they may form

wherein Z is defined above;

a is an optional bond which may be located in either the 5, 6 or 6, 7 position; and X is O or H/OH; and

(b) a subthreshold bronchodilating effective amount of a beta adrenergic agonist chosen from among isoproterenol, terbutaline, metaproterenol and albuterol; to said mammal.

4,564,627

FEED COMPOSITION

Akio Hokazono, Yokohama, and Tatsuyoshi Sugimoto, Hashimoto, both of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

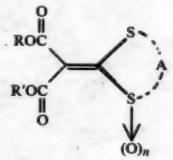
Filed Aug. 16, 1983, Ser. No. 523,772

Claims priority, application Japan, Aug. 19, 1982, 57-142651

Int. Cl.[4] A61K *31/38, 31/385*

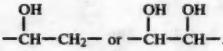
U.S. Cl. 514—430 **4 Claims**

1. A method for enhancing the carcass utility effectiveness of livestock, poultry and fish by feeding a feed composition containing a carcass utility effectiveness enhancing amount of a dithia derivative represented by the formula:



wherein R and R' are same or different lower alkyl groups, n is an integer of 0, 1 or 2, and A is —CH_2—,

(wherein M is hydrogen or a salt-forming residue), —CH=CH—, —CH_2—CH_2—,



4,564,628

SUBSTITUTED 2-AMINOTETRALINS

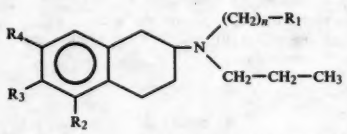
Alan S. Horn, Noordhorn, Netherlands, assignor to Nelson Research & Development Co., Irvine, Calif.

Continuation-in-part of Ser. No. 455,144, Jan. 3, 1983, abandoned. This application Aug. 13, 1984, Ser. No. 640,685

Int. Cl.[4] A61K *31/38;* **C07D** *333/12, 333/22, 307/02*

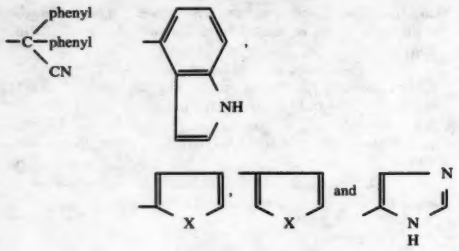
U.S. Cl. 514—438 **17 Claims**

1. A compound having the structural formula



where R_2, R_3 and R_4 are each selected from the group consisting of H, and OA; A is H or

R_5 is selected from the group consisting of alkyl and aromatic residues; n is 2 or 3; and R_1 is selected from the group consisting of 3-pyridyl, 4-pyridyl,



where X is S, O or NH, with the proviso that at least one of R_2, R_3 and R_4 is H, that at least one of R_2, R_3 and R_4 is not H and that R_2 and R_4 are not both OA; and pharmaceutically-acceptable salts thereof.

4,564,629

FUNGICIDAL COMPOSITIONS

Walter Kunz, Oberwil, Switzerland; Wolfgang Eckhardt, Lörrach, Fed. Rep. of Germany, and Adolf Hubele, Magden, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

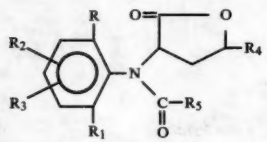
Division of Ser. No. 2,490, Jan. 11, 1979, abandoned, which is a division of Ser. No. 873,585, Jan. 30, 1978, Pat. No. 4,147,792. This application Aug. 22, 1980, Ser. No. 180,267

Claims priority, application Switzerland, Feb. 4, 1977, 1381/77; Mar. 28, 1977, 3884/77

Int. Cl.[4] A01N *43/08;* **C07D** *307/30*

U.S. Cl. 514—472 **12 Claims**

1. A compound of the formula I



wherein

R represents C_1–C_4-alkyl, C_1–C_4-alkoxy or halogen,

R_1 represents C_1–C_3-alkyl, C_1–C_4-alkoxy or halogen,

R_2 represents hydrogen, C_1–C_3-alkyl, C_1–C_4-alkoxy or halogen,

R_3 represents hydrogen or methyl, with the total number of C atoms of the substituents R, R_1, R_2 and R_3 in the phenyl ring not exceeding the number 8,

R_4 represents hydrogen or methyl, and

R_5 represents an alkylthioalkyl or alkoxyalkyl group having 2 to 5 carbon atoms.

4,564,630

CARBAMYLOXYBENZHYDROL DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Edit Tóth; József Törley; István Hajdu; Sánder Görög; Andrea Maderspach; György Hajós; László Szporny, and András Jávor, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt, Budapest, Hungary

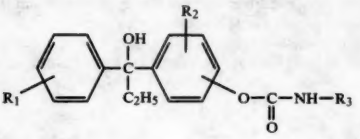
Filed Dec. 27, 1983, Ser. No. 565,922

Claims priority, application Hungary, Dec. 28, 1982, 4191/82

Int. Cl.[4] A61K *31/27;* **C07C** *125/067, 125/075*

U.S. Cl. 514—478 **4 Claims**

1. A compound of the formula (I)



wherein

R_1 is hydrogen, halogen, trihalomethyl, alkyl having from one to 4 carbon atoms or alkoxy having from one to 4 carbon atoms;

R_2 is hydrogen or an R_3—NH—COO— group;

R_3 is alkyl having from one to 6 carbon atoms, cycloalkyl having up to 7 carbon atoms, or phenyl which can be substituted with at least one halogens.

3. An antilipaemic composition containing a pharmaceutically effective amount of a compound of the formula (I) as defined in claim 1, together with a pharmaceutically acceptable carrier and/or auxiliary substance.

4,564,631

BAITS FOR COMBATING VERMIN

Alfred Elbert, Cologne; Wolfgang Behrenz, Overath, and Ingomar Krehan, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 14, 1983, Ser. No. 532,237

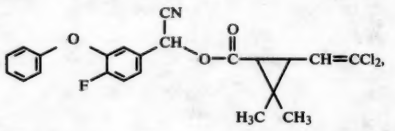
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1982, 3235931

Int. Cl.[4] A01N *37/34, 25/00*

U.S. Cl. 514—521 **3 Claims**

1. An insecticidal bait comprising an insecticidally effective amount of

(a) α-cyano-3-phenoxy-4-fluorobenzyl 2,2-dimethyl-3-(β,β-dichlorovinyl)-cyclopropanecarboxylate of the formula



and

(b) an insect attracting amount of sugar.

4,564,632

INSECTICIDAL AND ACARICIDAL AGENTS AND THEIR USE

Konrad Nonn; Karlheinz Wolf, both of Leverkusen; Johannes Haas, Grevenbroich, and Volker Paulat, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 25, 1981, Ser. No. 324,912

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3048021

Int. Cl.[4] A01N *37/34*

U.S. Cl. 514—522 **5 Claims**

1. An insecticidal and acaricidal composition, which when diluted with water forms a clear colloidal solution, comprising

(a) an insecticidally and acaricidally active water-insoluble benzyl or phenoxybenzyl ester of a cyclopropanecarboxylic acid or an isopropylphenylacetic acid, and

(b) a water soluble product produced by condensing 1 mol of phenol with 1 to 3 mols of styrene or vinyltoluene and reacting the condensation product with 8 to 50 mols of ethylene oxide or propylene oxide, the weight ratio of (a) to (b) ranging from 1:1–20.

4,564,633

COMPOSITIONS AND METHODS USEFUL FOR PRODUCING ANALGESIA

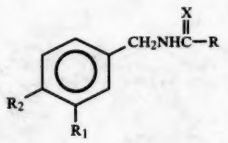
Thomas R. LaHann, Cleves, Ohio, and Brian L. Buckwalter, Yardley, Pa., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 514,206, Jul. 14, 1983, Pat. No. 4,493,848. This application Nov. 28, 1984, Ser. No. 676,025

Int. Cl.[4] A61K *31/24*

U.S. Cl. 514—538 12 Claims

1. A method for producing analgesia in humans or lower animals, which comprises administering to said human or lower animal a safe and effective amount of monoalkenamide compound or pharmaceutically-acceptable salt thereof, or mixtures thereof, of the formula:



wherein X is O or S; R is straight or branched, cis-monounsaturated alkenyl having from 11 to 23 carbon atoms; R_1 is OH or OCH_3; and R_2 is a short-chain ester containing from 1 to 6 carbon atoms.

4,564,634

SELENIUM COMPOUNDS HAVING ANTINEOPLASTIC ACTIVITY, PROCESS FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS THEREFROM

Emanuel Revici, New York, N.Y., assignor to Alphatime Ltd. Co., Inc., St. Treviglio, Italy

Filed May 19, 1983, Ser. No. 496,111

Claims priority, application Italy, May 28, 1982, 21552 A/82; Apr. 19, 1983, 20672 A/83

Int. Cl.[4] A01N *37/06;* A61K *31/22;* C11C *1/00*

U.S. Cl. 514—558 5 Claims

1. An organic compound of selenium prepared from eleostearic acid and selenium, which contains 0.1%-5% of selenium, exhibits ultraviolet absorption maxima typical of conjugated trienes and conjugated dienes.

4,564,635

ALLYLSULFOXIDE ENZYME INHIBITORS

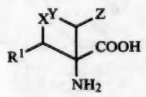
Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 498,344, May 26, 1983, Pat. No. 4,491,590, which is a division of Ser. No. 349,809, Feb. 18, 1982, Pat. No. 4,400,395, which is a division of Ser. No. 147,656, May 7, 1980, Pat. No. 4,332,813, which is a continuation-in-part of Ser. No. 66,603, Aug. 15, 1979, abandoned. This application Oct. 23, 1984, Ser. No. 663,925

Int. Cl.[4] A61K *31/195;* C07C *101/10*

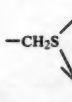
U.S. Cl. 514—562 6 Claims

5. A method of inhibiting enzymes in a patient in need of such treatment which comprises the administration of an enzyme inhibitory amount of a compound of structural formula:



or a pharmaceutically acceptable salt thereof wherein X is hydrogen, fluoro, chloro, bromo, iodo, C_{2-4} alkanoyloxy, toluenesulfonyloxy, benzenesulfonyloxy, C_{1-3} alkanesulfonyloxy, p-nitrobenzoyloxy, or

is hydrogen or



and Z is fluoro, chloro, bromo, iodo, C_{2-4} alkanoyloxy, toluenesulfonyloxy, benzenesulfonyloxy, C_{1-3} alkanesulfonyloxy, p-nitrobenzoyloxy, or

or Y and Z taken together form $=CH_2$; with the proviso that one and only one of X, Y and Z is a sulfoxide, and one and only one of X and Z is halo;

wherein

R is

(1) phenyl,
(2) nitrophenyl,
(3) cyanophenyl,
(4) C_{1-3} alkylsulfonylphenyl,
(5) C_{1-3} alkoxycarbonylphenyl,
(6) di(trifluoromethyl)phenyl,
(7) o-C_{1-3} alkylphenyl, or
(8) o,o-di(C_{1-3} alkyl)phenyl, and

R^1 is

aminoethyl, or

hydrogen.

4,564,636

DIPHENYLAZOMETHINES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Jean P. Kaplan, Bourg la Reine, France, assignor to Synthelabo, Paris Cedex, France

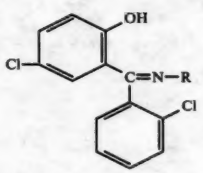
Filed Apr. 13, 1984, Ser. No. 599,799

Claims priority, application France, Apr. 14, 1983, 83 06081

Int. Cl.[4] C07C *101/30, 103/29, 119/14;* A61K *31/195, 31/165, 31/135*

U.S. Cl. 514—567 2 Claims

1. A diphenylazomethine of the formula

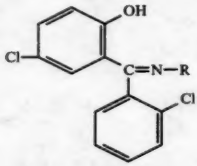


wherein R is selected from the group consisting of —CH_2—CHOH—CH_2—COOH, —CH_2—CHOH—CH_2CONH_2, —CH_2—CH_2—CHOH—CH_2OH, and —CH_2-

CHOH—COOH, in the form of a racemate or of an optically active isomer.

2. A pharmaceutical composition for treating depression comprising

an antidepressant effective amount of a diphenylazomethine of the formula



wherein R is selected from the group consisting of $-(CH_2)_4OH$, $-(CH_2)_2-CHOH-CH_3$, $-CH_2-CHOH-C_2H_5$, $-CH_2-CHOH-CH_2-COOH$, $-CH_2-CHOH-CH_2CONH_2$, $-CH_2-CH_2-CHOH-CH_2OH$, and $-CH_2-CHOH-COOH$, in the form of a racemate or of an optically active isomer when said diphenylazomethine contains an asymmetric carbon and a pharmaceutically acceptable carrier.

4,564,637

METHOD FOR MAINTAINING CORNEAL SHAPE AFTER RADIAL KERATOTOMY

Ronald A. Schachar, P.O. Box 145, Denison, Tex. 75020

Filed Aug. 19, 1981, Ser. No. 294,158

Int. Cl.[4] A61K *31/19, 31/135, 31/557*

U.S. Cl. 514—573 **7 Claims**

1. A method for effecting and maintaining the curvature of the cornea of an eye in a predetermined curvature after radial keratotomy surgery wherein the cornea has at least one radial incision comprising elevating the intraocular pressure of said eye above normal levels by directly administering to said eye an amount of an intraocular pressure-raising compound effective to raise the intraocular pressure above the normal value, and maintaining the intraocular pressure at an elevated level for a period of time to permit the corneal incision of said radial keratotomy to heal, whereby the cornea is maintained in said predetermined curvature.

4,564,638

FUNGICIDAL NOVEL N-BENZYL-N-(2-NORBORNYL)-UREAS

Yasuo Yamada, Hino; Junichi Saito, Mitaka; Tatsuo Tamura, Hamura, and Shinji Sakawa, Hino, all of Japan, assignors to Nihon Tokushu Boyaku Seizo K.K., Tokyo, Japan

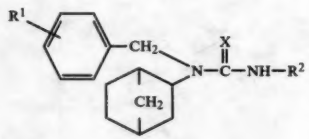
Filed Jun. 10, 1983, Ser. No. 503,212

Claims priority, application Japan, Jun. 17, 1982, 57-103004

Int. Cl.[4] A01N *47/32;* **C07C** *157/05, 127/15*

U.S. Cl. 514—585 **11 Claims**

1. A benzylurea derivative of by the formula



in which

R^1 is a halogen atom or a lower alkyl group,

X is an oxygen or sulfur atom, and

R^2 is an alkyl group, a cycloalkyl group having 5 to 8 carbon atoms, or a phenyl group which may be substituted by at least one member of the class consisting of halogen atoms, lower alkyl groups, lower alkoxy groups and hydroxyl groups.

4,564,639

N-(2,6-DIFLUOROBENZOYL-N-'-(2-FLUORO-4-HALOPHENYL)UREA

Hiroshi Nagase, Kawanishi, and Yasuo Sato, Kyoto, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

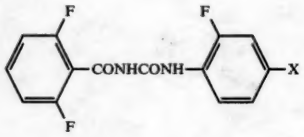
Filed Mar. 1, 1983, Ser. No. 471,191

Claims priority, application Japan, Mar. 1, 1982, 57-32623; Dec. 9, 1982, 57-215835

Int. Cl.[4] C07C *127/22;* **A01N** *47/28*

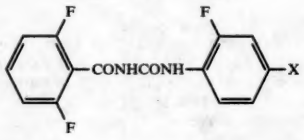
U.S. Cl. 514—594 **18 Claims**

1. A compound of the formula:



wherein X is a halogen.

13. A method for killing insects which comprises contacting the insect with a compound of the formula:



wherein X is a halogen.

4,564,640

AMIDINOUREAS SUBSTITUTED IN BOTH THE UREA AND AMIDINO NITROGEN POSITIONS

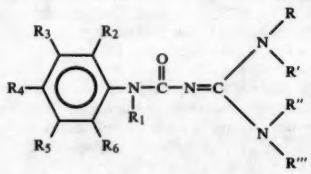
William L. Studt, Harleysville; Richard L. Riley, Chalfont, and George H. Douglas, Malvern, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Continuation-in-part of Ser. No. 280,787, Jul. 6, 1981, abandoned. This application Feb. 2, 1984, Ser. No. 576,414

Int. Cl.[4] A61K *31/17*

U.S. Cl. 514—598 **4 Claims**

1. A method for lowering blood pressure in mammalian species comprising administering orally to a patient an orally effective amount of an amidinourea compound of the formula



where:

R, R', R'', R''' and R_1 may be the same or different and and are hydrogen or lower alkyl, provided that at least one of R, R', R'' and R''' is other than hydrogen;

R_2 and R_6 may be the same or different and are lower alkyl, halo, lower alkoxy, halo lower alkyl, nitro, or lower alkylsulfonyl;

R_4 is hydroxy;

R_3 and R_5 may be the same or different and are hydrogen, hydroxy, lower alkoxy, arloweralkoxy, lower alkynyloxy, lower alkenyloxy, halo loweralkyl acyloxy or loweralkyl acyloxy;

provided that R_3, R_4 and R_5 are not all hydroxy; and wherein:

arloweralkoxy means lower alkoxy substituted with phenyl or phenyl in which one or more of the phenyl hydrogens has been replaced by the same or different substituents selected from the group consisting of halo, lower alkyl, halolower alkyl, nitro, amino, lower alkanoyl, hydroxy, lower hydroxy, phenyl-lower alkoxy, lower alkanoyl, cyano, halo-lower alkoxy, and lower alkyl sulfonyl;

or a nontoxic pharmaceutically acceptable salt thereof.

4,564,641

SUBSTITUTED 1-OXO-2-PHENYL-2-(2-ALKYLAMINOETHYL)-1,2,3,4-TETRAHYDRONAPHTHALENES, THEIR PREPARATION AND THEIR USE

Werner Seitz, Plankstadt; Hans-Jürgen Teschendorf, Dudenhofen; Alfred Michel, Enkenbach/Alsenborn; Martin Traut, Heidelberg; Hans P. Hofmann, Limburgerhof, and Horst Kreiskott, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 22, 1983, Ser. No. 554,298

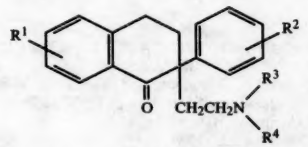
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1982, 3243518

Int. Cl.⁴ A61K *31/135, 31/205;* **C07C** *91/16*

U.S. Cl. 514—650 **8 Claims**

1. A 1-oxo-2-phenyl-2-(2-aminoethyl)-1,2,3,4-tetrahydronaphthalene of the formula I

I



where R^1 and R^2 are identical or different and are each hydrogen, halogen, trifluoromethyl, C_1–C_4-alkyl or C_1–C_4-alkoxy, R^3 is C_1–C_6-alkyl and R^4 is hydrogen, C_1–C_6-alkyl or benzyl, or R^3 and R^4 together may furthermore be a C_2–C_5-alkylene chain, and its salts with physiologically tolerated acids.

8. The method of treating mental disorders in a patient suffering therefrom, which comprises administering an effective amount of a compound as claimed in claim 1.

4,564,642

PROCESS FOR THE MANUFACTURE OF UNSATURATED HYDROCARBONS

Bernd Bussemeier, Mulheim; Carl D. Frohning; Gerhardt Horn, both of Oberhausen, and Werner Kluy, Bochum-Stiepel, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 122,744, Feb. 19, 1980, abandoned, which is a continuation of Ser. No. 963,149, Nov. 22, 1978, abandoned, which is a continuation of Ser. No. 832,722, Sep. 12, 1977, abandoned, which is a continuation of Ser. No. 711,857, Aug. 6, 1976, abandoned. This application Nov. 13, 1981, Ser. No. 321,086

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1975, 2536488

Int. Cl.⁴ C07C *1/04*

U.S. Cl. 518—717 **9 Claims**

1. A process for the production of unsaturated hydrocarbons having 2 to 4 carbon atoms by the catalytic hydrogenation of carbon monoxide which comprises the steps of reacting hydrogen and carbon monoxide in a reaction vessel at a reaction temperature of between about 250° C. and 350° C. and a reaction pressure of between about 10 and 20 bar in the presence of a catalyst consisting essentially of iron, an oxide of titanium, zinc oxide and potassium oxide, wherein the weight ratio of said iron to said titanium is between about 10:1 and 2:1.

4,564,643

PROCESS FOR THE PRODUCTION OF MIXED ALCOHOLS

Masatoshi Shibata; Soichi Uchiyama, and Yoshinobu Aoki, all of Chiba, Japan, assignors to Research Association for Petroleum Alternatives Development, Tokyo, Japan

Continuation of Ser. No. 551,330, Nov. 14, 1983, abandoned. This application May 7, 1985, Ser. No. 731,750

Claims priority, application Japan, Dec. 29, 1982, 57-229834

Int. Cl.⁴ C07C *27/06, 31/04*

U.S. Cl. 518—717 **8 Claims**

1. In a process for producing a mixed alcohol comprising methanol and higher alcohols than methanol comprising contacting a synthesis gas with a catalyst whereby methanol and higher alcohols are formed and recovered,

the improvement comprising using as said catalyst, a solid catalyst prepared by

calcining a mixture consisting essentially of (A) from 5 to 70% by weight, calculated as oxide, of a zinc compound, (B) from 1 to 50% of a nickel compound, and (C) from 1 to 70% of an aluminum compound or of a zirconium compound to form a calcined product;

impregnating said calcined product with (D) from 0.1 to 15% of an alkali metal compound;

calcining said calcined product impregnated with said alkali metal compound to form an alkali metal-containing calcined product; and

reducing said alkali metal-containing calcined product to form said catalyst.

4,564,644

ION EXCHANGE RESINS PREPARED BY SEQUENTIAL MONOMER ADDITION

William I. Harris, Parkmore, South Africa, assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 404,028, Aug. 2, 1982, abandoned. This application Jun. 22, 1983, Ser. No. 506,911

Int. Cl.⁴ C08D *5/20;* **C08F** *2/00*

U.S. Cl. 521—28 **20 Claims**

1. A process for preparing crosslinked copolymer beads comprising:

(a) forming a suspension of particles of a crosslinked or noncrosslinked polymer in a continuous aqueous phase, then

(b) swelling said polymer particles with a first monomer mix comprising from about 75 to about 99.5 parts by weight of a monoethylenically unsaturated monomer, about 0.5 to about 25 parts by weight of a polyethylenically unsaturated monomer and a sufficient amount of a substantially water-insoluble free radical initiator to catalyze the polymerization of said first monomer mix and a second monomer mix, then

(c) polymerizing said first monomer mix within said polymer particles until about 40 to about 95 weight percent of said monomers are converted to polymer, then

(d) continue adding to said suspension a second monomer mix, which second monomer mix comprises a monoethylenically unsaturated monomer but contains essentially no free radical initiator, said addition of said second monomer mix being made under conditions including a temperature sufficient to initiate the free radical polymerization of the monomer in said second monomer mix such that said monomer mix is imbibed by said polymer particles and the polymerization of said second monomer mix within said polymer particles is catalyzed by the free radical initiator contained in said first monomer mix and

wherein the monomers of the second monomer mix, when polymerized, comprise from about 40 to about 90 weight percent of the product copolymer beads.

4,564,645

PROCESS FOR THE PRODUCTION OF DIANHYDROHEXITOL MIXTURES AND THE PRODUCTION OF POLYMERS FROM SUCH MIXTURES

Herbert Salzburg; Manfred Hajek, both of Cologne, and Holger Meyborg, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Division of Ser. No. 515,411, Jul. 20, 1983, Pat. No. 4,506,086. This application Jan. 7, 1985, Ser. No. 689,357

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1982, 3229412

Int. Cl.[4] C08G *18/30*

U.S. Cl. 521—159 1 Claim

1. A process for the production of a poyurethane by reacting an organic polyisocyanate with a compound containing at least two active hydrogen atoms and having a molecular weight of from 400 to 12,000 and a chain extending agent in which the chain extending agent is a liquid isomer mixture of 1,4-3,6-dianhydrohexitols containing from 0.5 to 12 wt. % of 1,4-3,6-dianhydroiditol.

4,564,646

LIGHT- AND THERMOSETTING RESIN COMPOSITION AND INSULATED ELECTRICAL MACHINERY AND APPLIANCES USING THE SAME

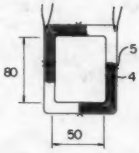
Hisashi Nishigaki, and Yuji Aimono, both of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 337,179, Jan. 5, 1982, abandoned. This application Feb. 16, 1984, Ser. No. 580,710

Claims priority, application Japan, Jan. 10, 1981, 56-2515; Mar. 11, 1981, 56-35637

Int. Cl.[4] C08F *2/50;* C08L *63/10*

U.S. Cl. 522—13 13 Claims



1. A light- and thermosetting resin composition which comprises

(a) 30 to 70 parts by weight an unsaturated epoxy ester having a resin acid value of 5 or less obtained by reacting a polyepoxide with an α,β-unsaturated monobasic acid, or a reaction product having a resin acid value of 5 or less obtained by reacting an unsaturated epoxy ester having a resin acid value of more than 5, said unsaturated epoxy ester having been prepared by reacting a polyepoxide with an α,β-unsaturated monobasic acid, with a monoepoxide,

(b) 70 to 30 parts by weight of at least one α,β-unsaturated ethylenic monomer the total of component (a) and component (b) being 100 parts by weight, said monomer being selected from the group consisting of styrene, vinyltoluene, ethylvinylbenzene, divinylbenzene, diallyl phthalate, α-methylstyrene, 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, 1,6-hexanediol diacrylate, 1-6-hexanediol dimethylacrylate, trimethylolpropane triacrylate, trimethylolpropane trimethacrylate, polyethyleneglycol diacrylate and polyethyleneglycol dimethacrylate, and

(c) 0.1 to 3% by weight of at least one photosensitizer and 0.5 to 3% by weight of at least one peroxide based on the total weight of components (a) and (b).

4,564,647

PROCESS FOR THE PRODUCTION OF POLYETHYLENE COMPOSITIONS

Hiroshi Hayashi; Koichi Matono; Satoshi Asahi, all of Sodegaura, and Michitake Uoi, Ichihara, all of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Nov. 8, 1984, Ser. No. 669,760

Claims priority, application Japan, Nov. 14, 1983, 58-212399; Nov. 15, 1983, 58-213337; May 14, 1984, 59-94690; May 28, 1984, 59-106544; May 30, 1984, 59-108289; Jun. 4, 1984, 59-113031

Int. Cl.[4] C08K *3/04, 9/02;* C08F *2/44, 10/02*

U.S. Cl. 523—211 26 Claims

1. A low pressure process for producing a polyethylene composition which comprises polymerizing (i) ethylene or (ii) compolymerizing ethylene and a small amount of other α-olefins at low pressure to produce said polyethylene composition in the presence of an amount of a catalyst comprising:

(A) a product resulting from contact treatment of

(a) a high activity catalyst component containing a transition metal and soluble in a hydrocarbon solvent, and

(b) a filler; and

(B) an organoaluminum compound; wherein the component

(a) has sufficient activity so that at least 10 kilograms of polyethylene per gram of the transition metal atom per unit ethylene partial pressure is produced in a low-pressure polymerization of ethylene in the presence of the component (a) and the component (B), sufficiently small so that deashing of said polyethylene composition to remove catalyst is not required.

4,564,648

EPOXY GRAFT ACRYLIC WATER-BASED PRIMER SURFACES

Jozef T. Huybrechts, Turnhout, and Victor R. Vleminckx, Schelle, both of Belgium, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 21, 1984, Ser. No. 652,858

Int. Cl.[4] C08L *63/10*

U.S. Cl. 523—423 14 Claims

1. A dispersion in water of:

(a) 10–60% of an epoxy ester graft acrylic polymer formed by reacting 5–30% of an epoxy ester polymer formed by reaction of n moles of a difunctional epoxy resin with terminal oxirane groups and a number average molecular weight ($\overline{Mn}$) of 300–5,000, n−1 moles of a diacid, and 2 moles of a monofunctional acid to form a reaction product, onto which is grafted 5–30% of an acrylic monomer by using a peroxide or azo initiator, to produce said epoxy ester acrylic polymer with a $\overline{Mn}$=1000–50,000 and an acid number of 30–150,

(b) amines being added to an extent equivalent to neutralizing 50–200% of the moles of acid functionality,

(c) organic solvents,

such dispersion having not more than 10% volatile organic solvents plus amines, and

(d) balance water.

4,564,649

POLYVINYL ALCOHOL AND LIGNIN SULFONATE CONTAINING ADHESIVE

Robert M. Hume, III, Cottage Grove; Robert A. LaBrash, Roseville, and Michael J. Vander Giessen, Blaine, all of Minn., assignors to H. B. Fuller Company, St. Paul, Minn.

Filed Apr. 16, 1984, Ser. No. 600,400

Int. Cl.[4] C08L *29.04, 97/00*

U.S. Cl. 524—13 11 Claims

1. An aqueous film-forming adhesive having elevated tack,

extended open time, biological stability, heat stability, and strong adhesion which comprises:

(a) an aqueous phase comprising about 25 to 75 wt-% of the adhesive;

(b) a solid component consisting essentially of about 25 to 75 wt-% of the adhesive containing an ammonium or alkali metal lignin sulfonate composition and a polyvinyl alcohol composition wherein there are about 1 to 8 parts by weight of the lignin sulfonate composition per each part by weight of the polyvinyl alcohol composition; and

(c) an effective bond strength improving amount of a cellulosic fiber.

4,564,650

FLAME RETARDANT AMINE TERMINATED POLYAMIDE COMPOSITION

Arie Hochberg, Montclair, and Charles D. Mason, Chatham, both of N.J., assignors to Allied Corporation, Morris Township, N.J.

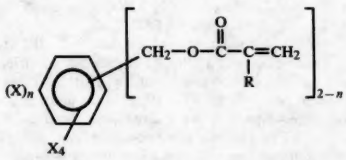
Filed Dec. 22, 1983, Ser. No. 564,610

The portion of the term of this patent subsequent to Jun. 25, 2002, has been disclaimed.

Int. Cl.[4] C08K *5/10*

U.S. Cl. 524—288 **19 Claims**

1. A composition comprising: from 5 to 20 weight percent of a homopolymer of a monomer having the formula



wherein n=0 or 1, X is bromine or chlorine and R is hydrogen or methyl, said polymer having a molecular weight between 1×10^3 and 10×10^6, said molecular weight determined by gel permeation chromotography in tetrahydrofuran;

from 80 to 95 weight percent of a polyamide having an excess of polymer chains terminated with amine end groups; and

from 0 to 10 weight percent of antimony oxide in place of a corresponding amount of polyamide.

4,564,651

METHOD FOR THE MANUFACTURE OF REACTION RESIN MOLDING MATERIALS

Helmut Markert, Nuremburg; Wolfgang Rogler; Klaus Kretzschman, both of Erlangen, and Klaus-Robert Hauschildt, Nuremburg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 27, 1984, Ser. No. 624,972

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1983, 3323122

Int. Cl.[4] C08K *3/36*; C08G *18/58, 18/18, 71/02*

U.S. Cl. 524—589 **15 Claims**

1. A method for preparing reaction resin molded materials containing oxazolidinone and isocyanurate rings, which comprises:

mixing a polyepoxide and a polyisocyanate to form a resin mixture having a viscosity up to about 7000 mPa sec at 25° C. wherein the mole ratio of epoxy to isocyanate groups is in the range of about 1:1 to 5:1, said resin mixture being free of triallyl cyanurate;

reacting the resin mixture in the presence of a catalyst selected from the group consisting of an imidazole and a tertiary amine, under the conditions of elevated gelling temperatures of from about 80° C. to about 130° C. to form a cross-linked polymer;

heating the cross-linked polymer to about 130° to about 200° C. to cause post-hardening and produce a molded material;

the molded material having a mole ratio of oxazolidinone to isocyanurate rings greater than about 1 and the reaction of epoxy and isocyanate groups being greater than about 90% after hardening.

4,564,652

PROCESS FOR PREPARING AQUEOUS DISPERSION OF POLYTETRAFLUOROETHYLENE

Tetsuo Shimizu, and Masafumi Akamatsu, both of Osaka, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Filed Sep. 12, 1984, Ser. No. 649,707

Claims priority, application Japan, Sep. 12, 1983, 58-168670

Int. Cl.[4] C08L *27/12*

U.S. Cl. 524—805 **7 Claims**

1. A polymerization process for preparing an aqueous PTFE dispersion containing colloidal PTFE particles having a comparatively large average particle size, comprising polymerizing TFE in an aqueous medium at a temperature of from 10° to 100° C. in the presence of a fluorine-containing dispersant and a water soluble polymerization initiator, in which, during a first phase of said polymerization process including a period just after the initiation of the polymerization and before consumption of 30% of said TFE to be polymerized, said polymerization process is regulated at a pressure not higher than 4 Kg/cm_2, during which period at least 1 g of TFE per liter of said aqueous medium is consumed, and during a second phase of said polymerization process including a period wherein the remainder of said TFE is polymerized, said polymerization process is regulated at a pressure of from 6 to 30 Kg/cm^2.

4,564,653

IMPACT MODIFIER AND THERMOPLASTIC RESIN COMPOSITION USING THE SAME

Kazumasa Kamata, Koganei; Kazuo Ueda, and Kiyokazu Kitai, both of Otake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Aug. 29, 1984, Ser. No. 645,358

Claims priority, application Japan, Aug. 31, 1983, 58-159350; Sep. 21, 1983, 58-174878

Int. Cl.[4] C08L *33/02, 51/00, 51/06*

U.S. Cl. 525—67 **8 Claims**

1. An impact modifier comprising a blend of

100 parts by weight of a multi-layer graft copolymer (1) composed of monomers selected from the group consisting of alkyl acrylates, alkyl methacrylates, aromatic vinyl compounds, vinyl cyanide compounds and butadienes and having a multi-layer structure consisting of at least three layers (A), (B) and (C) in which

the polymer constituting the outermost layer (A) has a glass transition temperature of 0° C. or below, said outermost layer (A) constituting 10 to 50% by weight of the multi-layer graft copolymer;

the polymer constituting the second layer (B) from said outermost layer (A) and has a glass transition temperature of 60° C. or above, said second layer (B) constituting 20 to 60% by weight of the multi-layer graft copolymer; and

the polymer constituting the third layer (C) from said outermost layer (A) has a glass transition temperature of 0° C. or below, said layer (C) constituting 10 to 60% by weight of the multi-layer graft copolymer;

each of said layers containing a polyfunctional crosslinking agent in an amount of 0 to 5% by weight of the layer, and

0.1 to 20 parts by weight of a copolymer (2) obtained by copolymerizing 3 to 30% by weight of an unsaturated acid monomer selected from the group consisting of acrylic acid, methacrylic acid, crotonic acid, itaconic acid, cinnamic acid, maleic anhydride and butenecarboxylic acid and 97 to 70% by weight of a vinyl monomer copolymerizable therewith selected from the group consisting of

alkyl acrylates, alkyl methacrylates, aromatic vinyl compounds and vinyl cyanide compounds.

3. A thermoplastic resin composition having excellent impact resistance and molding workability, comprising 100 parts by weight of a thermoplastic resin and 3 to 50 parts by weight of the impact modifier set forth in claim 1.

4,564,654

PROCESS FOR THE PREPARATION AND/OR FURTHER PROCESSING OF POLYMER BLENDS

Volker Serini, Krefeld; Christian Lindner, Cologne; Horst Peters, Leverkusen, and Wolfgang Nising, St. Augustin, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Nov. 26, 1984, Ser. No. 674,846

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1983, 3344102

Int. Cl.[4] C08L *51/04, 69/00*

U.S. Cl. 525—67 **13 Claims**

1. A process for the production of a polymer blend consisting essentially of

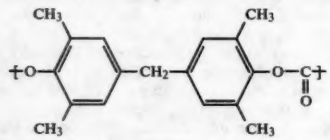
A-1 to 99% by weight of a thermoplastic aromatic tetramethylbisphenol F-containing polycarbonate and a copolymer selected from

B-99 to 1% by weight of a styrene/acrylonitrile copolymer or

C-99 to 1% by weight of a graft polymer, consisting of 5 to 95% by weight of a styrene/acrylonitrile copolymer and 95 to 5% by weight of a butadiene rubber with 0 to 50% by weight of comonomers in addition to butadiene, of an ethylene/propylene/diene rubber or of a rubber consisting of acrylates with 0 to 30% by weight of other comonomers, prepared by polymerisation of styrene/acrylonitrile blends in the presence of one of the stated rubbers, or combinations thereof,

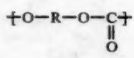
the sum of the components A+B+C being 100% by weight, in which

the aromatic polycarbonate (A) contains at least 80% by weight of repeating structural units of the formula (1)



(1)

and not more than 20% by weight of repeating structural units of the formula (3)



(3)

wherein —O—R—O— is a diphenolate radical, and the repeating structural units of the formula (1) must amount to at least 25% by weight of the aromatic polycarbonate; the amount of acrylonitrile in the styrene/acrylonitrile copolymer of components B and C is 1.5 to 15% by weight; and

mixing of the components to form the blend is carried out at a temperature of above 270° C., in an extruder or kneader.

4,564,655

POLYCARBONATE COMPOSITIONS

Ping Y. Liu, Naperville, Ill., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 10, 1984, Ser. No. 680,330

Int. Cl.[4] C08L *69/00*

U.S. Cl. 525—92 **13 Claims**

1. A polycarbonate composition exhibiting improved resistance to organic solvents comprising, in admixture:

(i) at least one high molecular weight aromatic polycarbonate resin;

(ii) at least one selectively hydrogenated linear, sequential or radial teleblock copolymer of a vinyl aromatic compound (A) and (A') independently selected from styrene, alpha-methylstyrene, p-methyl-styrene, vinyl toluene, vinyl xylene, or vinyl naphthylene and an olefinic elastomer (B) of the type A—B—A'; A—(B—A—B)$_n$—A, A(BA)$_n$B, (A)$_4$B, B(A)$_4$ or B((AB)$_n$B)$_4$ wherein n is an integer having a value of from 1 to 10 inclusive; and

(iii) at least one ethylene propylene diene terpolymer;

components (ii) and (iii) being present in amounts at least effective to improve the solvent resistance of said polycarbonate resin.

4,564,656

PREPARATION OF GRAFT COPOLYMERS OF POLYPHENYLENE ETHER AND RUBBER, OPTIONALLY INCLUDING POLY(ALKENYL AROMATIC)

Glenn D. Cooper, deceased, late of Delmar, N.Y. (by Rose H. Cooper, executrix), and Philip L. Kinson, Breckville, Ohio, assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 543,386, Oct. 19, 1983, abandoned, which is a continuation-in-part of Ser. No. 322,088, Nov. 17, 1981, abandoned, which is a continuation-in-part of Ser. No. 322,089, Nov. 17, 1981, abandoned, which is a continuation-in-part of Ser. No. 322,090, Nov. 17, 1981, abandoned. This application Feb. 26, 1985, Ser. No. 705,621

Int. Cl.[4] C08F *8/00*

U.S. Cl. 525—152 **7 Claims**

1. A process for preparing an impact resistant thermoplastic polymer, comprising the steps of:

(a) providing a mixture of (1) a polyphenylene ether resin and (2) a diene rubber, in a mutual solvent;

(b) heating the mixture in the presence of a source of catalytic free radicals at a temperature and for a period of time sufficient to achieve chemical bonding between at least a portion of the (1) and a portion of the (2), whereby a graft copolymer of the two is formed;

(c) forming a second mixture, comprising the graft copolymer from step (b) and an alkenyl aromatic monomer; and

(d) polymerizing the alkenyl aromatic monomer in the second mixture, whereby a terpolymer of the polyphenylene ether, diene rubber and poly(alkenyl aromatic) is formed.

4,564,657

RAPIDLY CURABLE ACRYLIC ADHESIVE COMPOSITIONS FOR BONDING POLYPROPYLENE

Toshihiko Nishikubo, Tokyo, and Kazuo Shimizu, Iwakunishi, both of Japan, assignors to Sanyo Kokusaku Pulp Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1984, Ser. No. 580,989

Claims priority, application Japan, Aug. 30, 1983, 58-157230

Int. Cl.[4] C08L *61/20*

U.S. Cl. 525—158 **3 Claims**

1. A rapidly curable adhesive composition suitable for bonding to polypropylene comprising at least one polymer selected from the group consisting of sulfochlorinated and chlorinated polypropylene dissolved in at least one polymerizable monomer selected from the group consisting of acrylic monomer and methacrylic monomer, wherein the average chlorine content of the polymer is from 26% to 34% by weight, and the

weight average molecular weight of the polymer as determined by gas permeation chromatography is from 5,000 to 120,000.

4,564,658

THERMOPLASTIC POLYESTER-LINEAR LOW DENSITY POLYETHYLENE MOLDING COMPOSITIONS

Ping Y. Liu, Naperville, Ill., assignor to General Electric Company, Pittsfield, Mass.

Filed Nov. 24, 1982, Ser. No. 444,228
Int. Cl.[4] C08L *67/02*
U.S. Cl. 525—177 **7 Claims**

1. A thermoplastic molding composition comprising
(a) poly(1,4-butylene terephthalate) and
(b) from 0.1 to about 20 percent by weight based on (a) & (b) of a linear low density polyethylene, which is a copolymer of ethylene and butene-1, having a density of from about 0.89 to about 0.96 grams/cc and a melt index of at least about 5 gm/10 min.

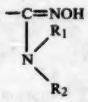
4,564,659

CHELATE RESIN AND PROCESS FOR PRODUCING THE SAME

Yushin Kataoka; Masaaki Matsuda; Kenji Ochi, and Masahiro Aoi, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 22, 1983, Ser. No. 525,473
Claims priority, application Japan, Sep. 1, 1982, 57-153028
Int. Cl.[4] C08F *8/30*
U.S. Cl. 525—328.2 **6 Claims**

1. A chelate resin having a functional group represented by the formula:



(I)

wherein R_1 and R_2 are each independently a hydrogen atom, an alkyl group, an aminoalkyl group, or a phenyl group and a functional group represented by the formula:

(II)

wherein R_3 is an amino group, an alkylamino group, a polyethylenepolyamino group, a hydrazo group, a hydrazino group, a hydrazono group, an amidino group, a guanidino group, or a semicarbazide group, the equivalent ratio of the functional group of the formula (II) to that of (I), (II)/(I), being 0.1 to 1.

4,564,660

USE OF ALKYLALUMINUM COMPOUNDS AND HYDROXYL-CONTAINING COMPOUNDS TO INITIATE POLYMERIZATION OF ETHYLENE WITH CHROMIUM OXIDE CATALYSTS

Gary H. Williams, Somerville, and Frederick J. Karol, Belle Mead, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 30, 1983, Ser. No. 509,602
Int. Cl.[4] C08F *2/34, 10/02*
U.S. Cl. 526—106 **30 Claims**

1. A method for initiating homopolymerization of ethylene, or copolymerization of ethylene with at least one other alpha-olefin containing from 3 to 8 carbon atoms, employing a supported chromium oxide catalyst which comprises

(1) adding an alkylaluminum compound and a hydroxyl-containing compound to the reactor of a fluidized bed polymerization reaction system prior to the commencement of polymerization, and subjecting said alkylaluminum compound and said hydroxyl-containing compound to a pressure of from 350 kPa to 2000 kPa and a temperature of from 20° C. to 150° C. for a time sufficient for said alkylaluminum compound to react completely with the moisture present in said reactor and said hydroxyl-containing compound,

said alkylaluminum compound having the formula

$$AlR_aR_bR_c$$

wherein R_a, R_b and R_c are alkyl radicals containing from 1 to 12 carbon atoms, and said alkylaluminum compound being added to said reactor in an amount sufficient to react with at least a major amount of the moisture present in the reaction system,

said hydroxyl-containing compound having carbon-hydroxyl or metal-hydroxyl linkages which are capable of reacting with the alkylaluminum compound to form a Lewis salt, and said hydroxyl-containing compound being added to said reactor in an amount sufficient to react with all of the alkylaluminum compound added to the reactor, and

(2) introducing a supported chromium oxide catalyst into the reactor under polymerization conditions suitable for said catalyst at a rate of from 5 percent to 100 percent of the rate normally employed during polymerization, and maintaining said conditions until polymerization is initiated.

4,564,661

TERTIARY PERFLUOROALKOXIDES AS SURFACTANTS IN PTFE DISPERSION POLYMERIZATION

Aleksander Beresniewicz, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 12, 1985, Ser. No. 711,055
Int. Cl.[4] C08F *2/24*
U.S. Cl. 526—212 **11 Claims**

1. In a process for producing a colloidal dispersion of polytetrafluoroethylene homopolymer or copolymers of tetrafluoroethylene and ethylenically unsaturated comonomers by polymerizing tetrafluoroethylene and, optionally, ethylenically unsaturated comonomers, in an aqueous medium in the presence of a suitable initiator and a surfactant, the improvement comprising use as surfactant of a compound of the formula

wherein
R^1 is (C_nF_{2n+1}) or $CF_3O(CF_2O)_mCF_2$;
M is a monovalent cation;
n is an integer from 6 to 12; and
m is an integer from 3 to 10.

4,564,662

FLUOROCARBON ELASTOMER

Loren D. Albin, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 23, 1984, Ser. No. 582,926
Int. Cl.[4] C08F *16/24*
U.S. Cl. 526—247 **17 Claims**

1. Fluorocarbon elastomer gum having interpolymerized units derived from principal comonomers and a vinyl ether cure site monomer of the formula ROCX=CYZ where one or two of X, Y, and Z substituents are selected from bromine and iodine atoms and the remainder of the substituents are independently selected from hydrogen, fluorine, or chlorine atoms,

and where R is a straight or branched chain or cyclic alkyl or alkenyl radical, aryl radical, or combinations of such radicals, the hydrogen atoms of R may be substituted with chlorine or fluorine and R may contain catenary nitrogen or oxygen atoms, said principal comonomers being vinylidene fluoride with at least one terminally unsaturated comonomer containing at least one fluorine atom substituent on each vinylic or double-bonded carbon atom, each carbon atom of said comonomer being substituted only with fluorine, chlorine, hydrogen, lower fluoroalkyl radical, or lower fluoroalkoxy radical.

4,564,663

FREE RADICAL CURE OF THE BISMALEIMIDE OF DIMER DIAMINE

Eugene C. Martin, and Albert A. De Fusco, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 21, 1985, Ser. No. 703,633
Int. Cl.[4] C08F *22/40*
U.S. Cl. 526—262 **8 Claims**

1. The free radical cure of the bismaleimide of dimer diamine comprising the steps of:

mixing a promoter solution with said bismaleimide to form a first mixture;

adding a hydroperoxide to said first mixture to form a second mixture;

degassing said second mixture;

purging said second mixture; and

heating said second mixture.

4,564,664

EMULSION-ACRYLIC PRESSURE-SENSITIVE ADHESIVES FORMED IN TWO STEP POLYMERIZATION

Man-Chium Chang, Los Angeles; Chung-Ling Mao, Arcadia, and Richard R. Vargas, South Gate, all of Calif., assignors to Avery International Corporation, Pasadena, Calif.

Filed Aug. 12, 1983, Ser. No. 522,491
Int. Cl.[4] C08F *222/10, 120/04*
U.S. Cl. 524—833 **27 Claims**

1. A pressure-sensitive adhesive which is an interpolymer formed of an interpolymerizable hard-monomer system comprising at least one alkyl methacrylate containing from about 2 to about 6 carbon atoms, said hard-monomer system being present in an amount up to about 25% by weight, based on the total weight of the monomers, said alkyl methacrylate independently controlling cohesive strength of the interpolymer, and an unsaturated carboxylic acid containing from about 2 to about 8 carbon atoms and present in a positive amount up to about 10% by weight of the monomers; and a soft-monomer system comprising at least one alkyl diester of fumaric acid in which each alkyl group independently contains from about 2 to about 8 carbon atoms, said alkyl diester of fumaric acid being present in an amount up to about 30% by weight, based on the total weight of the monomers and independently controlling tack and peel of the formed interpolymer, and at least one additional soft monomer, including at least one alkyl acrylate, said adhesive being formed by an emulsion polymerization process in which, to a first emulsion containing from about 80% to about 100% of the total alkyl diester of fumaric acid, there is added, under polymerization conditions, a second emulsion containing the other monomers.

4,564,665

OIL GAS SEPARATION

Ian C. Callaghan, Wokingham, England; Hans-Ferdi Fink, Essen, Fed. Rep. of Germany; Clive M. Gould, Staines, England; Götz Koerner, Essen, Fed. Rep. of Germany; Hans-Jürgen Patzke, Gelsenkirchen-Resse, Fed. Rep. of Germany, and Christian Weitemeyer, Essen, Fed. Rep. of Germany, assignors to The British Petroleum Company p.l.c., London, England

Filed Apr. 5, 1983, Ser. No. 482,202
Claims priority, application United Kingdom, Apr. 7, 1982, 8210320
Int. Cl.[4] C08G *77/06*
U.S. Cl. 528—21 **4 Claims**

1. A polysiloxane characterized by the fact that it contains components of molecular weight in the range of 83,000 to 305,000 and containing not more than 2.8% by weight of components of molecular weight 7,100 or lower, not more than 28% by weight of components of molecular weight 83,000 or lower, not more than 14.5% by weight of components of molecular weight 305,000 or higher, and not more than 0.03% by weight of components of molecular weight 1,750,000 or higher, molecular weights being expressed as polystyrene equivalent molecular weights.

4,564,666

URETHANE ACRYLATES BASED ON POLYEPICHLOROHYDRIN POLYETHER DIOLS AND OPTICAL FIBER COATINGS BASED THEREON

Donald W. Fieder, Chicago; Joseph J. Stanton, Buffalo Grove; Christopher E. Fisher, LaGrange, and Orvid R. Cutler, Jr., Rolling Meadows, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Mar. 11, 1985, Ser. No. 710,337
Int. Cl.[4] C08G *18/67*
U.S. Cl. 522—33 **7 Claims**

1. A liquid ultraviolet-curable coating composition containing at least 45% up to about 95% by weight of acrylated polyurethane-based oligomer comprising at least 10%, based on the total weight of polymerizable material, of an acrylated polyurethane-based ultraviolet-curable oligomer in which the oligomer is the reaction product of an organic diisocyanate with a polyepichlorohydrin polyether diol having a number average molecular weight of from about 1,000 to about 15,000, said reaction product being capped at each end thereof with a monohydric acrylate, and at least about 5% up to 55% of the composition being a liquid which is rapidly polymerizable with ultraviolet radiation to provide said composition with coating viscosity.

4,564,667

UREA-FORMALDEHYDE RESIN MANUFACTURE

David Taylor, Halesowen, England, assignor to BIP Chemicals Limited, Manchester, England

Filed Feb. 22, 1985, Ser. No. 704,405
Claims priority, application United Kingdom, Feb. 23, 1984, 8404758
Int. Cl.[4] C08G *12/34, 12/30*
U.S. Cl. 528—256 **15 Claims**

1. A resin comprising a reaction product of urea and formaldehyde having a ratio of formaldehyde to urea which is between 2.0:1 and 1.1:1 wherein the degree of condensation of the resin is between 25% and 45%, and the resin is a solid at room temperature.

4. A solid resin according to claim 1 which comprises also units derived from an amide, a reactive hydroxyl compound or an amino-triazine compound or a formaldehyde reaction product of one of these compounds, said units comprising not more than 4 per cent by weight of the resin.

4,564,668

PROCESS FOR PREPARATION OF POLYVINYLENE SULFIDE

Tatsumi Arakawa; Masaru Ozaki, and Yukihiro Ikeda, all of Fuji, Japan, assignors to Director-General of Agency of Industrial Science and Technology

Filed Oct. 9, 1984, Ser. No. 658,996

Claims priority, application Japan, Mar. 31, 1984, 59-62157

Int. Cl.[4] C08G *75/14*

U.S. Cl. 528—388 2 Claims

1. A process for the preparation of polyvinylene sulfide which comprises reacting 1,2-dichloroethylene of the formula: ClHC=CHCl with sodium sulfide in the presence of dimethyl sulfoxide at a temperature of from 10° C. to 55° C.

4,564,669

THERMOTROPIC AROMATIC POLYESTERS HAVING A HIGH TENACITY AND AN IMPROVED MELT VISCOSITY, AND MOULDINGS, FILAMENTS, FIBRES AND FILMS THEREOF

Hans-Rudolf Dicke; Manfred Schmidt, both of Krefeld; Aziz El-Sayed, Leverkusen; Ulrich Biskup, Cologne; Ludwig Bottenbruch, Krefeld, and Dieter Freitag, Krefeld-Traar, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Jul. 3, 1984, Ser. No. 627,971

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1983, 3325705

Int. Cl.[4] C08G *63/60*

U.S. Cl. 528—173 4 Claims

1. A thermotropic fully aromatic polyester prepared by reacting

(a) p-hydroxybenzoic acid or p-hydroxybenzoic acid substituted by one or two of C_1–C_4 alkyl, C_1–C_4 alkoxy, C_6–C_{10} aryl, C_7–C_{12} alkylaryl or halogen;

(b) isophthalic acid, terephthalic acid, or mixtures thereof which are unsubstituted or substituted by one or two C_1–C_4 alkyl, C_1–C_4 alkoxy, C_6–C_{10} aryl, C_7–C_{12} alkylaryl or halogen;

(c) 2,7-dihydroxynaphthalene; and

(d) up to 90 mole-percent based on the total amount of (c) and (d) of unsubstituted or substituted hydroquinone, resorcinol, bisphenol A, 4,4'-dihydroxydiphenyl, 4,4'-diphenylether, 4,4'-diphenylsulphide, 4,4'-diphenylsulphone or mixtures thereof and when substituted are substituted by up to four of halogen, phenyl or methyl; which polyesters contain the condensed radicals (a) in quantities of at least 40 mole-percent, based on the total of radicals (a), (b), (c) and (d), contain the condensed radicals (c) plus (d) in quantities of from 5 to 30 mole-percent, based on the total of radicals (a), (b), (c) and (d), with the limitation that the mol ratio of the condensed radicals b/(c+d) is from 0.95 to 1.05.

4,564,670

DISPERSIBLE SULFUR PRODUCT AND ITS PROCESS OF MANUFACTURE

James E. Kearnan, Monongahela, Pa., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 28, 1985, Ser. No. 717,220

Int. Cl.[4] C08G *75/14*

U.S. Cl. 528—389 20 Claims

1. A flowable, particulate sulfur dispersion consisting essentially of particulate sulfur dispersed in liquid poly(cis-isoprene) dispersion agent in the substantial absence of a latex coagulation agent.

4,564,671

CONTINUOUS PREPARATION OF POLYOXYBUTYLENE POLYOXYALKYLENE GLYCOLS

Herbert Mueller, Frankenthal, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 14, 1984, Ser. No. 681,546

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1983, 3346136

Int. Cl.[4] C08G *65/20*

U.S. Cl. 528—416 8 Claims

1. A process for the continuous preparation of a polyoxybutlene polyoxyalkylene glycol or its half-esters or half-ethers by copolymerization of tetrahydrofuran with a 1,2-alkylene oxide in the presence of a compound containing reactive hydrogen, where the polymerization is carried out in a reactor at below 50° C. over a fixed-bed clay catalyst and with recycling of the reaction mixture, wherein less than 30% by weight, based on the reaction mixture to be recycled, of a mixture of tetrahydrofuran, 1,2-alkylene oxide and a compound containing reactive hydrogen is added to the reaction mixture, which is recycled to the reactor after flowing through the latter.

4,564,672

WATER-SOLUBLE MONOAZO AND DISAZO COMPOUNDS CONTAINING A FIBRE-REACTIVE 2-ALKOXY-5-CHLORO-ANILINE DIAZO COMPONENT AND COPPER COMPLEXES THEREOF, USEFUL AS DYESTUFFS

Ludwig Schläfer, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

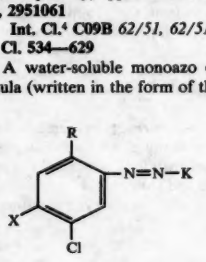
Continuation-in-part of Ser. No. 420,100, Sep. 20, 1982, abandoned, which is a continuation of Ser. No. 338,855, Jan. 12, 1982, abandoned, which is a continuation of Ser. No. 217,525, Dec. 17, 1980, abandoned. This application Jul. 27, 1983, Ser. No. 517,806

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951061

Int. Cl.[4] C09B *62/51, 62/513, 62/515;* D06B *1/38*

U.S. Cl. 534—629 12 Claims

1. A water-soluble monoazo or disazo compound of the formula (written in the form of the free acid)

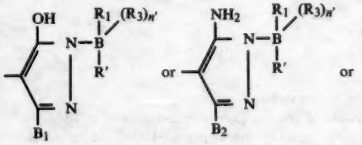


in which

R is alkoxy of 1 to 4 carbon atoms,

X is vinylsulfonyl or beta-sulfatoethylsulfonyl or beta-thiosulfatoethylsulfonyl, and

K is a group of the formula



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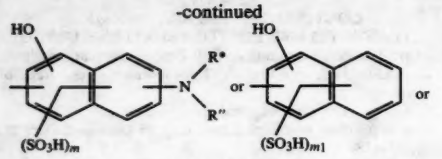
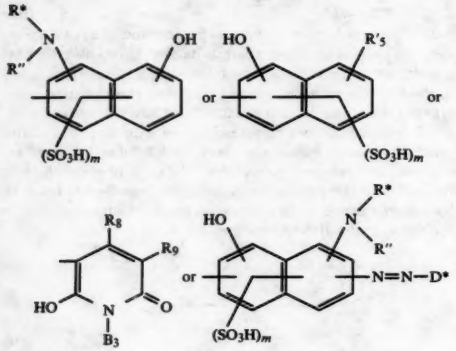




in which

R' is carboxy or sulfo,

R_1 is hydrogen, lower alkyl, lower alkoxy, chlorine, bromine, lower alkanoylamino or sulfo,

R_3 is hydrogen, lower alkyl, lower alkoxy, chlorine or bromine,

R'_5 is phenylureido, lower alkanoylamino, lower alkenoylamino, benzoylamino or benzoylamino substituted by substituents selected from the group consisting of chlorine, methyl, methoxy, nitro, sulfo and carboxy,

R_8 is hydrogen, cyano, lower alkyl or lower alkyl substituted by lower alkoxy,

R_9 is sulfo or lower sulfoalkyl,

R'' is hydrogen, lower alkyl, phenyl or phenyl substituted by 1 or 2 substituents selected from the group consisting of lower alkyl, lower alkoxy, chlorine, bromine and sulfo,

R* is hydrogen or lower alkyl,

B is a benzene or naphthalene ring,

B_1 is lower alkyl, carboxy, carbomethoxy, carboethoxy or phenyl,

B_2 is lower alkyl, carbomethoxy, carboethoxy, carbonamide, phenyl or phenyl substituted by 1 or 2 substituents selected from the group consisting of lower alkyl, lower alkoxy, chlorine, bromine and sulfo,

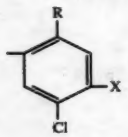
B_3 is hydrogen, lower alkyl or lower alkyl substituted by phenyl or sulfophenyl,

m is 1 or 2,

m_1 is 1, 2 or 3,

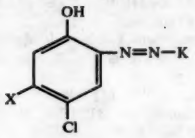
n' is 1 or 2, and

D* is a group of the formula



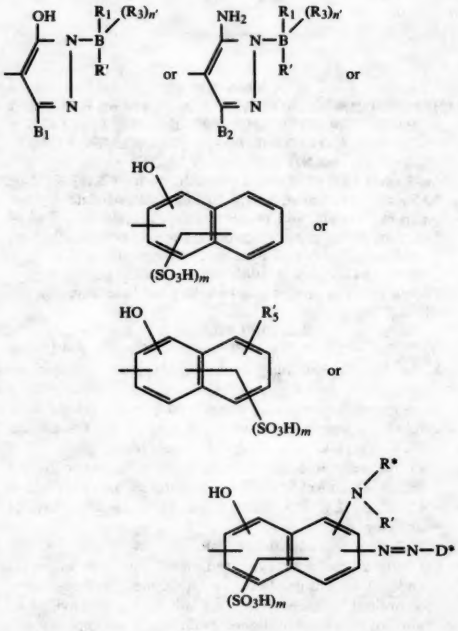
wherein R and X are defined as above.

2. A water-soluble copper-complex compound of the monoazo or disazo compound of the formula (written in the form of the free acid)



in which X is vinylsulfonyl or beta-sulfatoethylsulfonyl or beta-thiosulfatoethylsulfonyl, and

K is a group of the formula



in which

R' is carboxy or sulfo,

R_1 is hydrogen, lower alkyl, lower alkoxy, chlorine, bromine, lower alkanoylamino or sulfo,

R_3 is hydrogen, lower alkyl, lower alkoxy, chlorine or bromine,

R'_5 is phenylureido, lower alkanoylamino, lower alkenoylamino, benzoylamino or benzoylamino substituted by substituents selected from the group consisting of chlorine, methyl, methoxy, nitro, sulfo and carboxy,

R'' is hydrogen, lower alkyl, phenyl or phenyl substituted by 1 or 2 substituents selected from the group consisting of lower alkyl, lower alkoxy, chlorine, bromine and sulfo,

R* is hydrogen or lower alkyl,

B is a benzene or naphthalene ring,

B_1 is lower alkyl, carboxy, carbomethoxy, carboethoxy or phenyl,

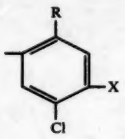
B_2 is lower alkyl, carbomethoxy, carboethoxy, carbonamide, phenyl or phenyl substituted by 1 or 2 substituents selected from the group consisting of lower alkyl, lower alkoxy, chlorine, bromine and sulfo,

m is 1 or 2,

m_1 is 1, 2 or 3,

r' is 1 or 2, and

D* is a group of the formula



wherein R and X are defined as above.

11. A compound according to claim 2, in which X is vinylsulfonyl or beta-sulfatoethylsulfonyl.

4,564,673

3-CYANO-5-NITROTHIOPHENE ANILINO MONOAZO DYE FOR SYNTHETIC FIBERS

Toshio Niwa; Kiyoshi Himeno, both of Kanagawa, and Shuichi Maeda, Saitama, all of Japan, assignors to Research Association Of Synthetic Dyestuffs, Tokyo, Japan

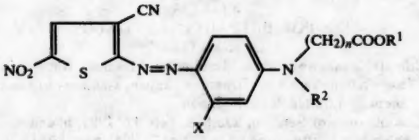
Filed Nov. 21, 1983, Ser. No. 554,112

Claims priority, application Japan, Nov. 22, 1982, 57-205259

Int. Cl.[4] C09B *29/033, 29/08;* **D06P** *1/18, 3/54*

U.S. Cl. 534—794 **7 Claims**

1. A monoazo dye represented by the formula



wherein X is hydrogen, methyl, acetylamino or chlorine, R^1 is phenyl, benzyl, phenethyl, phenoxymethyl or phenoxyethyl, n is an integer of 1, 2 or 3, and R^2 is alkyl having 1 to 4 carbon atoms, allyl, alkoxyethyl having 1 to 4 carbon atom in the alkoxy moiety or $-CH_2)_nCOOR^1$ wherein R^1 is the same as defined above.

4,564,674

PROCESS FOR AN ANTHRACYCLINE DERIVATIVE, AND AN ANTHRACYCLINONE DERIVATIVE USEFUL FOR THE PROCESS

Shiro Terashima, Tokyo; Yoshikazu Kimura, Sagamihara; Michiyo Suzuki, Sagamihara; Teruyo Matsumoto, Sagamihara, and Rumiko Abe, Sagamihara, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Oct. 19, 1984, Ser. No. 662,833

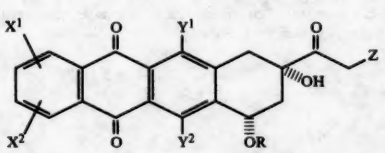
Claims priority, application Japan, Oct. 31, 1983, 58-202733; Oct. 31, 1983, 58-202734

Int. Cl.[4] C07H *15/24*

U.S. Cl. 536—6.4 **8 Claims**

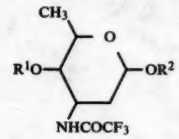
1. In a process for producing an anthracycline derivative, the improvement comprising:

reacting an anthracyclinone derivative of the formula:



(II)

where R is a hydrogen or a lower trialkylsilyl group, and each of X^1 and X^2 is a hydrogen atom, a methoxy, a hydroxyl, a halogen, or a lower alkyl; each of Y^1 and Y^2 is a hydrogen, a lower alkoxy or a hydroxyl; and Z is a hydrogen or a protected hydroxyl; with a 1-acyl-sugar derivative of the formula:

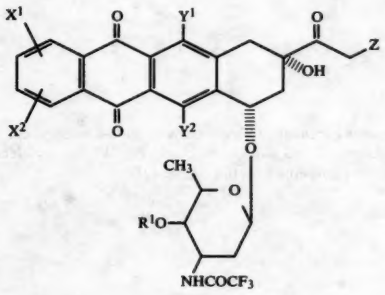


(III)

where each of R^1 and R^2 are independently a p-nitrobenzoyl. a trifluoroacetyl, and acetyl or a benzoyl; in the presence of a silyl sulfonic acid of the formula:

$$R^5R^4R^3SiOSO_2A$$

where each of R^3, R^4 and R^5 is a lower alkyl; A is benzenne, toluene, a polyfluoroalkyl or a hydrogen; to obtain an anthracycline derivative of the formula:



wherein X^1, X^2, Y^1, Y^2, Z and R^1 are as defined above.

4,564,675

PROCESS FOR PRODUCING 4'-DEMETHYL-EPIPODOPHYLLOTOXIN-β-D-ETHYLIDENE-GLUCOSIDE AND ACYL-DERIVATIVE THEREOF

Katsuhiko Kurabayashi, Annaka; Hidefumi Kinoshita; Hitoshi Saito, both of Takasaki, and Toshio Takahashi, Annaka, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

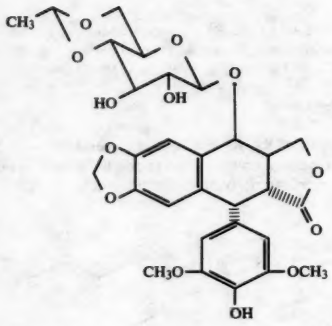
Filed Sep. 6, 1983, Ser. No. 529,749

Claims priority, application Japan, Nov. 26, 1982, 57-206188; May 18, 1983, 56-85868

Int. Cl.[4] C07H *15/24*

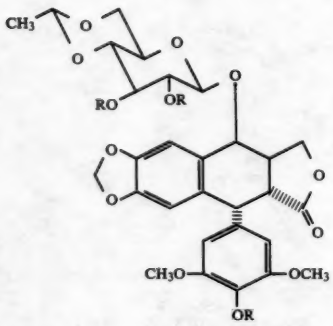
U.S. Cl. 536—18.1 **9 Claims**

1. A process for producing 4'-demethyl-epipodophyllotoxin-β-D-ethylidene-glucoside represented by the formula (II):



(II)

comprising reacting 4'-halogenoacetyl-4'-demethyl-epipodophyllotoxin-β-D-2,3-di-O-halogenoacetyl-4,6-O-ethylidene-glucoside represented by the formula (I):



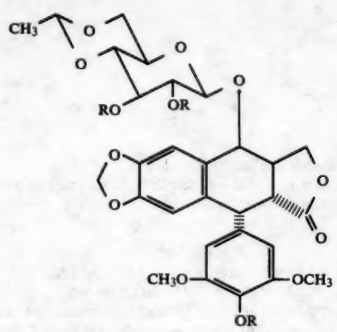
(I)

wherein R represents a halogenoacetyl group of the formula

—$COCH_2X$

wherein X is a halogen atom, with a material selected from the group consisting of (a) an amine, (b) ammonia, and (c) an amine and ammonia to remove said halogenoacetyl groups of (I), thereby obtaining said 4'-demethyl-epipodophyllotoxin-β-D-ethylidene-glucoside.

8. 4'-Halogenoacetyl-4'-demethyl-epipodophyllotoxin-β-D-2,3-di-O-halogenoacetyl-4,6-O-ethylidene-glucoside represented by the formula:



(I)

wherein R represents a halogenoacetyl group of the formula

—$COCH_2X$

wherein X is a halogen atom.

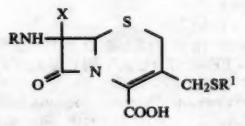
4,564,676

PROCESS FOR PREPARING CEPHALOSPORIN DERIVATIVES

Junichi Nakazawa; Teruo Hashimoto; Masanao Kaneko, and Takeo Miyaoka, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Continuation of Ser. No. 233,678, Feb. 11, 1981, abandoned, which is a continuation of Ser. No. 70,804, Aug. 29, 1979, abandoned. This application Mar. 23, 1983, Ser. No. 477,836
Claims priority, application Japan, Sep. 22, 1978, 53-116898
Int. Cl.[4] C07D *501/04*
U.S. Cl. 544—21 **13 Claims**

1. A non-catalytic process for the preparation of a cephalosporin derivative of formula (I):



I

wherein:

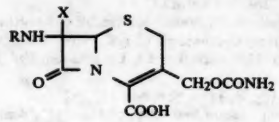
R is a hydrogen atom; a substituted acetyl group in which the substituent is amino group, substituted amino group, carboxyl group, halogen atom, sulfonyl group, hydroxy group, heterocyclic group, heterocyclic-thio group, heterocyclic-oxy group, substituted or unsubstituted alkylthio group or alkynylthio group; a substituted valeryl group in which the substituent is nitro group, amino group or carboxyl group; or a substituted benzoyl group in which the substituent is amino group, hydroxyl group or sulfo group;

R^1 is a substituted or unsubstituted tetrazole, thiadiazole or triazole group; or the group

and

X is a hydrogen atom or an alkoxy group;

said process consisting essentially of heating a cephalosporin compound of formula II:



II

with a thiol of formula III

R^1SH III

under (i) (a) anhydrous conditions or (i) (b) in the presence of water in an amount that does not exceed 2 times the weight of said compound of formula II and (ii) in the absence of an organic solvent.

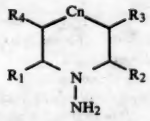
4,564,677

PREPARATION OF N-AMINO COMPOUNDS

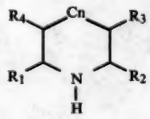
Martin L. Kantor, Mamaroneck, N.Y., assignor to USV Pharmaceutical Corp., Tarrytown, N.Y.

Filed Jan. 19, 1984, Ser. No. 571,977
Int. Cl.[4] C07B *31/00, 43/02*
U.S. Cl. 544—164 **2 Claims**

1. A method of preparing an N-amino compound of the formula



from a secondary amine of the formula



wherein:

n is 0–3;

R_1 and R_2 are independently H; lower alkyl containing 1 to 6 carbon atoms; cycloalkyl containing 3 to 7 carbon atoms; phenyl; phenyl substituted with halogen, trifluoromethyl, hydroxy, carboxy, lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, or lower alkenyl containing 1 to 6 carbon atoms;

R_3 and R_4 are independently H; lower alkyl containing 1 to 6 carbon atoms; cycloalkyl containing 3 to 7 carbon atoms; phenyl; phenyl substituted with halogen, trifluoromethyl, hydroxy, carboxy, lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, or lower alkenyl containing 1 to 6 carbon atoms, and when taken together with the carbon atoms to which they are attached and the carbon atom denoted by Cn, R_3 and R_4 form a cycloalkyl group containing 4 to 7 carbon atoms; a benzo group; or benzo group substituted with halogen, hydroxy, carboxy, trifluoromethyl, lower alkyl having 1 to 4 carbon atoms, or lower alkoxy having 1 to 4 carbon atoms;

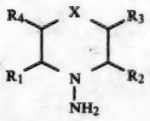
R_1 and R_4, when taken together with the carbon atoms to which they are attached form a cycloalkyl group containing 4 to 7 carbon atoms; a benzo group; or a benzo group substituted with halogen, trifluoromethyl, hydroxy, carboxy, lower alkyl having 1 to 4 carbon atoms, or lower alkoxy having 1 to 4 carbon atoms; said method comprising the steps of:

dissolving the secondary amine in a water-miscible solvent;

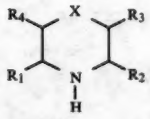
reacting said secondary amine with nitrous acid, followed by reaction with zinc in a neutral pH reaction media containing an ammonium salt to form the corresponding N-amine; and

separating said N-amine from the reaction media.

2. A method of preparing an N-amino compound of the formula



from a secondary amine of the formula



wherein:

R_1 and R_2 are independently H, lower alkyl containing 1 to 6 carbon atoms; cycloalkyl containing 3 to 7 carbon atoms; phenyl; phenyl substituted with halogen, trifluoromethyl, hydroxy, carboxy, lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, or lower alkenyl containing 1 to 6 carbon atoms;

R_3 and R_4 are independently H, lower alkyl containing 1 to 6 carbon atoms; cycloalkyl containing 3 to 7 carbon atoms; phenyl; phenyl substituted with halogen, trifluoromethyl, hydroxy, carboxy, lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, or lower alkenyl containing 1 to 6 carbon atoms, and when taken together with the carbon atoms to which they are attached and with the X atom, form a cycloalkyl group containing 4 to 7 atoms;

R_1 and R_4, when taken together with the carbon atoms to which they are attached form a cycloalkyl group containing 4 to 7 carbons; a benzo group; or a benzo group substituted with halogen, trifluoromethyl, hydroxy, carboxy, lower alkyl having 1 to 4 carbon atoms or lower alkoxy having 1 to 4 carbon atoms; and

X is O; S or N substituted with lower alkyl containing 1 to 6 carbon atoms, cycloalkyl containing 3 to 7 carbon atoms; phenyl; phenyl substituted with halogen, hydroxy, carboxy, trifluoromethyl, lower alkyl having 1 to 4 carbon atoms, or lower alkoxy having 1 to 4 carbon atoms; said method comprising the steps of:

dissolving the secondary amine in a water-miscible solvent;

reacting said secondary amine with nitrous acid, followed by reaction with zinc in a neutral pH reaction media containing an ammonium salt to form the corresponding N-amine; and

separating said N-amine from the reaction media.

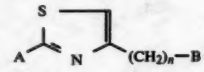
4,564,678

SUBSTITUTED AMINOTHIAZOLES AND METHOD OF MANUFACTURING THE SAME

Tsuyoshi Tomiyama, Sakaki, Japan, assignor to Kotobuki Seiyaku Company, Limited, Sakaki, Japan

Filed Nov. 18, 1983, Ser. No. 553,182
Claims priority, application Japan, Nov. 19, 1982, 57-203432
Int. Cl.[4] A61K *31/495*; C07D *417/06*
U.S. Cl. 544—367 7 Claims

1. A thiazole compound of the formula

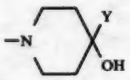


wherein:

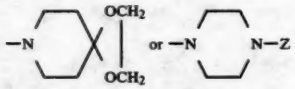
A is an amino, acylamino, guanidino or N,N-di-lower alkylaminomethyleneamino group;

n is an integer from 1 to 3;

B is



wherein Y is a phenyl or chloro-substituted phenyl group,



wherein Z is carboxy lower alkyl group,

and pharmaceutically acceptable acid addition salts thereof.

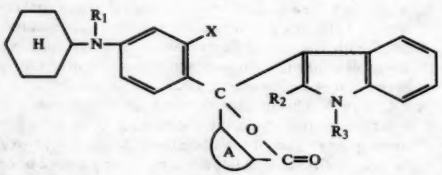
4,564,679

CHROMOGENIC COMPOUNDS

Yoshiharu Fujino; Hajime Kawai; Yasushi Nakai, and Katsuhiko Tsunemitsu, all of Kyoto, Japan, assignors to Yamada Chemical Co., Ltd., Kyoto, Japan

Filed Jun. 16, 1982, Ser. No. 388,935
Claims priority, application Japan, Jun. 23, 1981, 56-98662
Int. Cl.[4] C07D *471/02*
U.S. Cl. 546—116 9 Claims

1. A chromogenic compound of the formula:



where A is a pyridine ring forming a 4- or a 7-azaphthalide group; R_1 is a hydrogen atom or an alkyl radical of from 1 to 4 carbon atoms; X is a hydrogen atom, an alkyl radical of from 1 to 2 carbon atoms or an alkoxy radical of from 1 to 2 carbon atoms; R_2 is an alkyl radical of from 1 to 2 carbon atoms or a phenyl radical and; R_3 is a hydrogen atom or an alkyl radical of from 1 to 8 carbon atoms.

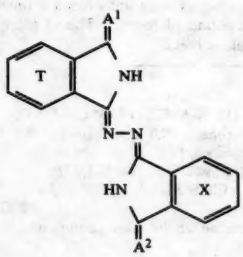
4,564,680

ISOINDOLAZINES

Meinhard Rolf; Rütger Neeff; Walter Müller, all of Leverkusen, and Volker Hederich, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 3, 1983, Ser. No. 519,792
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1982, 3229733
Int. Cl.[4] C09B *57/04*
U.S. Cl. 546—155 5 Claims

1. Isoindolazines which, in one of their tautomeric structures, have the formula

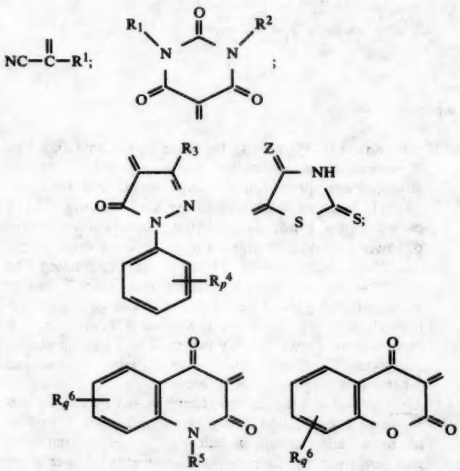


(I)

where

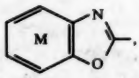
the rings designated X and T are unsubstituted or are substituted by 1,2,3 or 4 substituents selected from the group consisting of halogen, C_1–C_6-alkyl, C_1–C_6-alkoxy, carboxyl, nitro and carbamoyl and

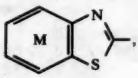
A^1 and A^2 represent the divalent radical of a compound having two replaceable hydrogen atoms on a C or N atom said radical being selected from the group consisting of the divalent radical of an amine, of a hydrazine, of a hydrazide, of a hydrazone or a divalent radical of the formulae

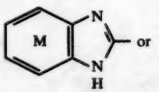


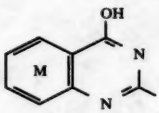
where R^1 designates cyano, C_1–C_6-alkoxy-C_1–C_6-alkoxycarbonyl, carbamoyl which is optionally substituted by C_1–C_6-alkyl, benzyl, naphthyl or phenyl, where phenyl, benzyl and naphthyl can be substituted by chlorine, bromine, C_1–C_6-alkyl, C_1–C_6-alkoxy, nitro, trifluoromethyl, C_1–C_6-alkylcarbonyl, cyano, C_1–C_6-alkylamino, benzylamino, phthalimidyl or car-

bamoyl, C_1–C_6-alkylcarbonyl, benzoyl, C_1–C_6-alkoxycarbonyl, benzyloxycarbonyl, phenoxycarbonyl, where benzoyl, benzyl and phenoxy can be substituted by halogen, nitro, C_1–C_6-alkyl, acylamino or phthalimidyl, phenyl which is optionally substituted by halogen, nitro, cyano or trifluoromethyl, or a heterocyclic radical of the formula









where

the rings designated M can be substituted by halogen, nitro, C_1–C_6-alkyl or C_1–C_6-alkoxy,

R_1 and R^2 designate hydrogen, C_1–C_6-alkyl, phenyl which is optionally substituted by halogen, C_1–C_6-alkyl, C_1–C_6-alkoxy or nitro, or α- or β-naphthyl,

R^3 represents C_1–C_6-alkyl, amino, C_1–C_6-alkylcarbonyl, carbamoyl or C_1–C_6-alkoxycarbonyl,

R^4 represents C_1–C_6-alkyl, C_1–C_6-alkoxy, halogen or nitro,

p designates 0, 1 or 2,

Z designates O or S,

R^5 designates hydrogen or C_1–C_6-alkyl,

R^6 designates halogen or nitro and

q designates 0, 1, 2, 3 or 4.

4,564,681

PRODUCTION OF MIXTURES RICH IN 3-CHLORO-2-TRICHLOROMETHYL PYRIDINE

Michael J. Marinak, Kelso, and John L. Simonson, Longview, both of Wash., assignors to Kalama Chemical, Inc., Kalama, Wash.

Filed Sep. 24, 1982, Ser. No. 422,751

The portion of the term of this patent subsequent to Dec. 11, 2001, has been disclaimed.

Int. Cl.[4] C07D *213/61*

U.S. Cl. 546—345 **4 Claims**

1. The process of non-catalytically chlorinating alpha-picoline hydrochloride in the liquid phase to produce at least a 14 percent by weight yield of 3-chloro-2-trichloromethyl pyridine based on alpha-picoline, said process comprising:

(a) establishing in a reactor means a diluent reactor charge which is made up of chlorinated pyridine and/or chlorinated picoline compunds, and diluent being essentially nonreactive with chlorine under the reaction conditions to which the reactants in the reactor means are subjected;

(b) while maintaining the reactor charge at a temperature of from about 135° C. to about 170° C., sparging chlorine and alpha-picoline hydrochloride into the reactor charge at the bottom thereof at a chlorine-to-picoline feed ratio of at least about 8:1 by weight in the absence of a catalyst and at a feed rate low enough so that any separation of the reactor charge into a second, lighter phase composed of unchlorinated alpha-picoline hydrochloride is less than about 10% of the reactor charge by volume, the excess of chlorine being fed to the reactor charge relative to the amount of alpha-picoline hydrochloride being fed thereto providing enhanced agitation of the reaction mass and sufficient chlorine to ensure that the chlorine partial pressure in the vapor space over the reactor charge is greater than 50%, and

(c) continuing chlorine addition, and maintaining the reaction mass at a temperature within the range indicated, for a time sufficient to give a recoverable yield of at least 14 percent by weight of 3-chloro-2-trichloromethyl pyridine.

4,564,682

PROCESS FOR THE PREPARATION OF HETEROCYCLIC PHENYL ETHERS

Ulrich Kussmaul, Karben; Johannes Becherer, Maintal; Reinhard Handte, Hofheim, and Rolf Müller, Karben, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt Am Main, Fed. Rep. of Germany

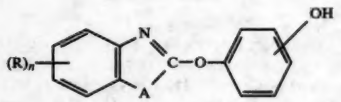
Filed Feb. 27, 1984, Ser. No. 583,713

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1983, 3311285

Int. Cl.[4] C07D *277/68*

U.S. Cl. 548—169 **7 Claims**

1. The process for preparation of heterocyclic phenyl ethers of the formula

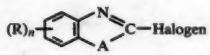


wherein each R is independently selected from halogen, trifluoromethyl, nitro, cyano, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms or alkylthio having 1 to 4 carbon atoms;

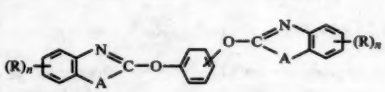
A is oxygen, sulfur or N-alkyl having 1 to 4 carbon atoms; and

n is a number from 0 to 3;

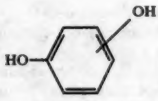
which process comprises reacting a compound of the formula



or



with a compound of the formula



in the presence of an acid.

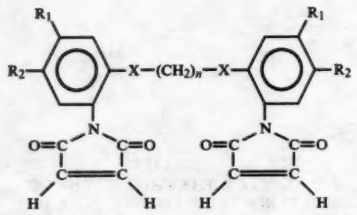
4,564,683

BISMALEIMIDE COMPOUNDS

Johnnie E. Adams, Grandview, Mo., and Donald R. Jamieson, Merriam, Kans., assignors to The United States of America as Represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 407,664, Aug. 12, 1982, Pat. No. 4,464,520.
This application Apr. 10, 1984, Ser. No. 598,620
Int. Cl.[4] C08G *73/12;* C07B *403/10*
U.S. Cl. 548—521 7 Claims

1. A bismaleimide of the formula



wherein

R_1 and R_2 each independently is H, C_{1-4}-alkyl, C_{1-4}-alkoxy, Cl or Br, or

R_1 and R_2 together form a fused 6-membered hydrocarbon aromatic ring,

with the proviso that R_1 and R_2 are not t-butyl or t-butoxy;

X is O, S or Se;

n is 1–3; and

the alkylene bridging group, optionally, is substituted by 1–3 methyl groups or by fluorine.

4,564,684

3-AMINO-1-PHENYL-2-PYRAZOLINES

Frederick C. Copp, Rotherwood, 32 Stanley Ave., Beckenham, Kent; Albert G. Caldwell, 119 Gates Green Rd., West Wickham, Kent, and David Collard, 25 The Mead, Beckenham, Kent, all of England

Continuation of Ser. No. 256,072, Apr. 21, 1981, abandoned.
This application May 23, 1984, Ser. No. 614,371
Claims priority, application United Kingdom, Dec. 16, 1980, 8040172
Int. Cl.[4] A61K *31/415;* C07D *231/06*
U.S. Cl. 548—362 5 Claims

1. A compound selected from the group consisting of:

3-(methylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;

3-(ethylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;

3-(n-propylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;

3-(iso-propylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;

3-(n-butylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;

3-(sec-butylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;

3-(tert-butylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;

3-(methylpropylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;

3-(benzylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;

3-(N,N-dimethylamino)-1-(4-trifluoromethylphenyl)-2-pyrazoline;

3-(methylamino)-1-(4-chlorophenyl)-2-pyrazoline;

3-(N-methyl-N-ethylamino)-1-(4-chlorophenyl)-2-pyrazoline;

3-(methylamino)-1-(4-fluorophenyl)-5-methyl-2-pyrazoline;

3-(benzylamino)-1-(4-bromophenyl)-4-methyl-2-pyrazoline;

3-(ethylamino)-1-(3-trifluoromethyl-4-fluorophenyl)-2-pyrazoline;

3-(tert-butylamino)-1-(3-trifluoromethyl-4-bromophenyl)-2-pyrazoline;

3-(allylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline;

3-(cyclohexylmethylamino)-1-(3-trifluoromethylphenyl)-2-pyrazoline; or an

acid addition salt thereof.

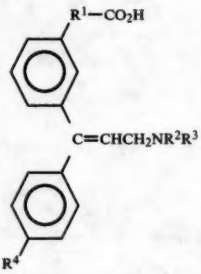
4,564,685

DIPHENYLMETHANE COMPOUNDS

John W. A. Findlay, Rte. 2, Box 514, Chapel Hill, N.C. 27514, and Geoffrey G. Coker, 80 Pickhurst Park, Bromley, Kent, England

Filed Mar. 10, 1983, Ser. No. 474,729
Int. Cl.[4] C07C *53/132;* C07D *207/04, 211/06, 295/00*
U.S. Cl. 548—578 12 Claims

1. A compound of the formula (I)



I

a straight or branched lower alkyl ester or a pharmaceutically acceptable salt thereof, wherein R^1 is $(CH_2)_n$ where n is an interger 0 to 7, or $(CH_2)_aCH{:}CH{-}(CH_2)_b$, a and b are independently 0 to 5 and the sum of a and b does not exceed 5; R^2 and R^3 are the same or different and are hydrogen, C_{1-4} alkyl or taken together with nitrogen are pyrrolidino, piperidino or morpholino and R^4 is hydrogen, halogen, lower alkyl or lower alkoxy.

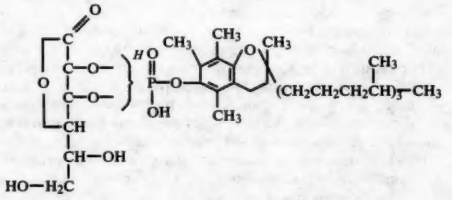
4,564,686

PHOSPHORIC ACID DIESTERS OR THEIR SALTS AND PROCESS FOR PRODUCING THE SAME

Kazumi Ogata, Toyonaka, Japan, assignor to Senju Pharmaceutical Co., Ltd., Osaka, Japan

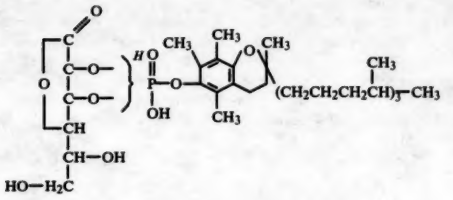
Filed May 30, 1984, Ser. No. 615,308
Claims priority, application Japan, May 30, 1983, 58-96428
Int. Cl.[4] C07F *9/06, 9/28*
U.S. Cl. 549—220 13 Claims

1. A phosphoric acid diester of the formula:



or its salt.

12. A pharmaceutical composition for the treatment of cataracts which comprises an anti-cataract effective amount of a compound of the formula:



or a pharmaceutically acceptable salt thereof and a carrier.

4,564,687

PROCESS FOR PREPARING SUBSTITUTED PHTHALIC ANHYDRIDES

Jeffrey E. Telschow, Tarrytown, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 20, 1984, Ser. No. 684,225
Int. Cl.[4] C07D *307/89*
U.S. Cl. 549—240 **12 Claims**

1. A process for preparing a substituted phthalic anhydride which comprises reacting the Diels-Alder addition product of a conjugated diene and maleic anhydride with sulfuryl chloride in the presence of pyridine.

7. A process for preparing a substituted phthalic anhydride which comprises:

(a) reacting a conjugated diene and maleic anhydride to form a Diels-Alder addition product;

(b) reacting the addition product with sulfuryl chloride in the presence of pyridine.

4,564,688

PROCESS FOR THE PRODUCTION OF MALEIC ANHYDRIDE BY THE OXIDATION OF BUTANE

Carl A. Udovich, Joliet, and Robert C. Edwards, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 526,167, Aug. 25, 1983, Pat. No. 4,510,259, which is a continuation-in-part of Ser. No. 382,180, May 26, 1982, Pat. No. 4,416,802. This application Mar. 28, 1984, Ser. No. 594,328
Int. Cl.[4] C07D *307/60*
U.S. Cl. 549—259 **3 Claims**

1. A process for the manufacture of maleic anhydride, which process comprises contacting a feedstock comprising butane and a gas containing molecular oxygen with the catalyst prepared according to a process comprising reacting in an aqueous medium a vanadium compound and inorganic acid, then adding ortho-phosphoric acid to form a soluble vanadium-phosphorus catalyst, removing the acidified water, and adding an aliphatic alcohol having about 1 to about 8 carbon atoms, and either an aromatic acid, or an aromatic anhydride, or a mixture of these, removing the alcohol, and drying the catalyst syrup under vacuum of about 0 to about 300 mm Hg at a temperature of about 90° to about 150° C. to produce the solid catalyst.

4,564,689

PRODUCT SEPARATION FROM ELECTROLYTE SALTS MAINTAINED IN MOLTEN STATE

James P. Coleman, Maryland Heights, and Dudley E. McMackins, St. Charles, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 13, 1983, Ser. No. 503,982
Int. Cl.[4] C07D *307/32*
U.S. Cl. 549—326 **7 Claims**

1. A process for preparing γ-vinyl-γ-butyrolactone in which butadiene and acetic acid are reacted in the presence of metal ion oxidants with electrolytic regeneration of such oxidants during the reaction, and the reaction is carried out in liquid solvent medium containing salts comprising manganese salts employed as oxidants and electrolyte salts at temperatures in the range of 100° C. to 180° C. and separating γ-vinyl-γ-butyrolactone by distillation at a temperature sufficiently high to leave salt residue in a molten state and in the range of about 140° to about 175° C., and the salts are recycled to the reaction, and in which the salt composition present is in liquid state at a temperature in the range of about 140° C. to about 175° C.

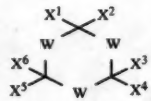
4,564,690

MACROCYCLIC COMPOUNDS

Iwao Tabushi, and Yoshiaki Kobuke, both of Kyoto, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Continuation of Ser. No. 202,614, Oct. 31, 1980, abandoned. This application Dec. 6, 1982, Ser. No. 447,443
Claims priority, application Japan, Nov. 14, 1979, 54-148136
Int. Cl.[4] C07C *61/00*; C07D *323/00*; C07F *9/38*
U.S. Cl. 549—352 **11 Claims**

1. A macrocyclic compound of formula (I)

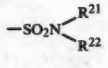


(I)

wherein X^1, X^3 and X^5 are individually taken from the first class consisting of —COOH,

$-SO_3H$, $-PO_3H_2$ and $-PO_4H_2$; and X^2, X^4 and X^6 are individually taken from the class consisting of said first class hydrogen, alkyl having 1–18 carbon atoms, phenyl, $-COOR^2$,

$-COR^1$, —CN, $-SOR^2$,



$-SO_2R^2$, $-NO_2$, $-PO_3R^{21}R^{22}$ and $-PO_4R^{21}R^{22}$; wherein R^1 is hydrogen, an alkyl having 1–18 carbon atoms, or a phenyl group, R^2 is an alkyl having 1–18 carbon atoms or a phenyl group, R^{11} and R^{12} are individually selected from the same group as R^1, and R^{21} and R^{22} are individually selected from the same group as R^2; and W is a divalent group taken from $-(CH_2)_n-$ wherein n=2–18 and wherein 0–9 (CH_2) groups have been replaced by a moiety selected from the group consisting of O, S, N—H, provided that any hetero atoms appearing within W are separated from each other by at least two carbon atoms and that the two terminal atoms of each W which are linked to non-W atoms of said compound are carbons.

4,564,691

PROCESS FOR PREPARING SUBSTITUTED 2,3-DIHYDROBENZOFURAN

Carlo Neri; Villiam Giroldini; Antonio Rinaldi, all of Milan; Mario Traversoni, Bergamo, and Mario Clerici, Milan, all of Italy, assignors to Enichimica Secondaria S.p.A., Palermo, Italy

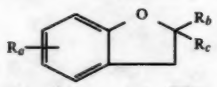
Filed Apr. 19, 1984, Ser. No. 602,215

Claims priority, application Italy, Apr. 22, 1983, 20737 A/83; Apr. 22, 1983, 20740 A/83

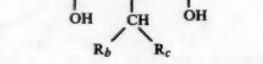
Int. Cl.[4] C07D 307/86, 307/79

U.S. Cl. 549—462 4 Claims

1. A process for the preparation of a substituted 2,3-dihydroxybenzofuran defined by the formula:



wherein R_a is selected from the group consisting of hydrogen, halogen, a straight lined or branched alkyl radical having from 1 to 4 carbon atoms, aryl, alkaryl, —OH, —OR_3, and -$N(R_d)_2$, R_d and R_3 being a straight lined or branched alkyl radical having from 1 to 4 carbon atoms; R_b is selected from the group consisting of a straight lined or a branched alkyl radical having from 1 to 6 carbon atoms, an aryl and an alkaryl; R_c is hydrogen or has the same meaning as R_b, comprising subjecting a starting compound defined by the general formula:



wherein R_a, R_b and R_c have the meanings explained above to a rearrangement reaction in the presence of a catalytic amount of at least one acid compound, at an elevated temperature, and removing from the reaction mass the products of the rearrangement reaction as they are formed.

4,564,692

PROCESS FOR RECOVERING PURE CRYSTALLINE MONOANHYDROHEXITOLS AND DIANHYDROHEXITOLS

John Feldmann, Krefeld, Fed. Rep. of Germany; Hubert Koebernick, Wyckoff, N.J.; Klaus Richter, Meerbusch-Boesinghoven, and Hans-Ulrich Woelk, Hamburg, both of Fed. Rep. of Germany, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Jul. 18, 1983, Ser. No. 514,731

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1982, 3230349

Int. Cl.[4] C07D 493/04, 307/20

U.S. Cl. 549—464 19 Claims

1. A process for recovering a pure crystalline anhydro sugar alcohol selected from the group consisting of 1,4-monoanhydro-D-sorbitol, 1,4:3,6-dianhydro-D-sorbitol, and 1,4:3,6-dianhydro-D-mannitol from an aqueous mixture, obtained by the acid-catalyzed dehydration of the corresponding sugar alcohols, of which at least 40% by weight on a dry solids basis is the desired anhydro sugar alcohol which consists of the sequential steps of

(a) concentrating the mixture to a heavy liquor with a dry solids content of at least 70% by weight;

(b) adjusting the temperature of the concentrated mixture to not more than 70° C.;

(c) inoculating the concentrated mixture with at least 0.1% by weight of the mixture of seed crystals of the desired anhydro sugar alcohol;

(d) stirring the inoculated mixture at such a rate as to promote crystallization of the anhydro sugar alcohol;

(e) maintaining the supersaturation of the mixture with respect to the anhydro sugar alcohol being crystallized in the range where the existing crystals continue to grow without the spontaneous formation of new seed crystals; and

(f) separating the crystalline anhydro sugar alcohol from the mixture.

4,564,693

PROCESS FOR STABILIZING ORGANOPOLYSILOXANES

Manfred Riederer, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 2, 1985, Ser. No. 761,935

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1984, 3428581

Int. Cl.[4] C07F 7/08, 7/18

U.S. Cl. 556—401 4 Claims

1. A process for stabilizing organopolysiloxanes prepared by condensation and/or equilibration of organosilicon compounds having Si-bonded oxygen in the presence of phosphorous compounds consisting of phosphonitrile chlorides and reaction products thereof, which comprises reacting the phosphorous compounds present in the organopolysiloxanes with at least one lithium compound which yields lithium chloride on reaction with chlorine bonded to phosphorous.

4,564,694

COLORLESS LIQUID CRYSTALLINE COMPOUNDS

Yoichi Hirai; Tsunenori Fujii; Kaoru Koto; Kenji Suzuki, all of Soka; Masahiro Yoshida, Saitama; Hisashi Okawa, Kasukabe; Yoshiaki Okabe, Hitachi; Teruo Kitamura, Katsuta; Hisao Yokokura; Shintaroo Hattori, both of Hitachi; Akio Mukoh, Mito, and Mikio Sato, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Kanto Chemical Co., Inc., both of Tokyo, Japan

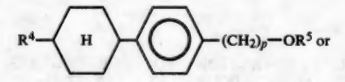
Filed Feb. 24, 1982, Ser. No. 352,019

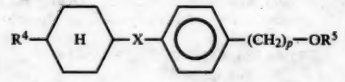
Claims priority, application Japan, Feb. 25, 1981, 56-25502; Jul. 10, 1981, 56-107074; Nov. 18, 1981, 56-183763; Nov. 18, 1981, 56-183764

Int. Cl.[4] C09K 3/34; G02F 1/13; C07C 69/74, 69/76, 41/00, 41/02, 41/18

U.S. Cl. 560—1 4 Claims

1. A colorless liquid crystalline compound of the formula:





wherein R^4 and R^5 are independently a straight-chain or branched-chain alkyl group having 12 or less carbon atoms; X is —COO— or —OCO—; and p is an integer of 1 to 8.

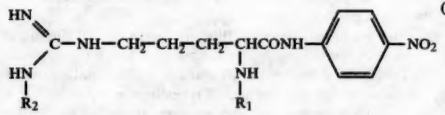
4,564,695

PROCESS FOR PRODUCING ARGINYL-P-NITROANILIDE

Katsumasa Kuroiwa; Shuichi Nakatsuyama, both of Koriyama, and Takeshi Nagasawa, Urawa, all of Japan, assignors to Nitto Boseki Co., Ltd., Fukushimi, Japan

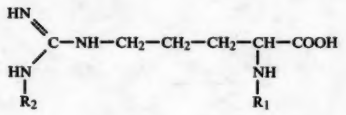
Filed Sep. 13, 1984, Ser. No. 650,353
Claims priority, application Japan, Sep. 14, 1983, 58-170402
Int. Cl.[4] C07C 79/46
U.S. Cl. 560—13 4 Claims

1. A process for producing an N^{α}-protected-N^{G}-protected-arginyl-p-nitronilide of the formula:



(I)

wherein R_1 is an α-amino protective group selected from the group consisting of a carbobenzoxy group, a p-methoxy-carbobenzoxy group, a t-butyloxycarbonyl group, a t-amyloxycarbonyl group, a trityl group, a p-nitrocarbobenzoxy group, a formyl group, and a trifluoroacetyl group; R_2 is an N-guanidino protective group selected from the group consisting of a nitro group, a tosyl group, and a p-methoxybenzenesulfonyl group or hydrogen, and in the case of R_2 being hydrogen, the N-guanidino group is protected by an acid in the form of a hydrochloride, hydrobromide or p-toluenesulfonate acid adduct, which comprises reacting an N^{α}-protected-N^{G}-protected arginine of the formula:



(II)

wherein R_1 and R_2 are as defined above, with p-nitroaniline in pyridine as a solvent in the presence of a dialkylcarbodiimide or a water-soluble carbodiimide condensing agent at a temperature of 10° to 50° C.

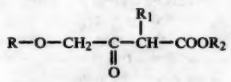
4,564,696

PROCESS FOR THE PRODUCTION OF 4-ALKOXYACETOACETIC ACID ESTERS

Claudio Abacherli, Visp, Switzerland, assignor to Lonza Ltd., Gampel, Switzerland

Filed Sep. 27, 1982, Ser. No. 423,569
Claims priority, application Switzerland, Oct. 1, 1981, 6320/81
The portion of the term of this patent subsequent to Sep. 10, 2002, has been disclaimed.
Int. Cl.[4] C07C 69/76
U.S. Cl. 560—53 14 Claims

1. Process for the production of a 4-alkoxyacetoacetic acid ester from a 4-chloroacetoacetic ester or a 4-bromoacetoacetic ester consisting of reacting a 4-chloroacetoacetic ester or a 4-bromoacetoacetic ester with more than one equivalent of an alkali alcoholate in at least one aprotic solvent at a temperature of 50° to 100° C., whereby the 4-alkoxyacetoacetic acid ester results, the 4-alkoxyacetoacetic acid ester having the formula:



wherein R and R_2 are each alkyl, and R_1 is H, alkyl or substituted alkyl.

4,564,697

HALOGENATED POLYOL-ESTER NEUTRALIZATION AGENT

Burton J. Sutker, Edison, N.J., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 29, 1984, Ser. No. 676,433
Int. Cl.[4] C07C 69/82, 69/753
U.S. Cl. 560—83 21 Claims

1. A process for making a flame retarded halogenated polyol by (a) reacting 0.5–10 equivalents of an aliphatic polyol with 1 equivalent of a halogenated cyclic acid anhydride in the presence of a potassium salt of a C_{2-4} fatty acid to form an acid-ester intermediate and (b) reacting 0.5–20 equivalents of an epoxide with said acid-ester intermediate to form said flame retardant halogenated polyol, said halogenated cyclic acid anhydride containing about 0.1–0.3 weight percent residual sulfuric acid, the amount of said potassium salt being at least sufficient to substantially neutralize said residual sulfuric acid to give a halogenated polyol having a pH of about 5.0–9.0 and which is substantially haze-free.

2. A process of claim 1 wherein said halogenated cyclic acid anhydride is selected from halogenated phthalic anhydrides and halogenated bicyclo-(2,2,1)-5-heptene-2,3-dicarboxylic anhydride.

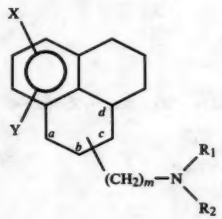
4,564,698

BIOLOGICALLY-ACTIVE TRICYCLIC AMINES

Johannes H. Wieringa, Heesch, and Frans A. van der Vlugt, Oss, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Continuation of Ser. No. 268,330, May 29, 1981, abandoned.
This application Jan. 24, 1983, Ser. No. 460,259
Claims priority, application Netherlands, May 30, 1980, 8003141
Int. Cl.[4] C07C 69/76, 87/28
U.S. Cl. 560—109 3 Claims

1. A compound of the formula:



or an acid addition salt thereof wherein the substituent $-(CH_2)_m-NR_1R_2$ is present at one of the positions indicated by a, b or c; X and Y represent hydrogen, (C_1-C_6) alkyl, (C_1-C_6) alkoxy, halogen, hydroxy or benzoyl,

R_1 and R_2 represent hydrogen or (C_1-C_6) alkyl and

m represents the number 0.

4,564,699

OXYDEHYDROGENATION PROCESS

Stephen E. Reiter, Bartlesville, Okla., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed May 20, 1982, Ser. No. 379,842
Int. Cl.[4] C07C 67/317
U.S. Cl. 560—214 5 Claims

1. In a process for the catalytic conversion of an isobutyric acid ester to a methacrylic acid ester by oxydehydrogenation wherein an iron phosphate type of oxydehydrogenation cata-

lyst is contacted with a gaseous stream containing said isobutyric ester and molecular oxygen at a temperature of from about 300° C. to 500° C.; the improvement comprising including in the gaseous stream an amine selected from the group consisting of butyl amine and pyridine whereby the converion and selectivity to the desired methacrylic acid ester is increased and the undesirable formation of methacrylic acid is decreased.

4,564,700

PROCESS FOR THE PREPARATION OF FLUORENE-9-CARBOXYLIC ACID

Winfried Orth, Hassloch; Emmerich Pastorek, Hemsbach, and Werner Fickert, Mannheim, all of Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 16, 1983, Ser. No. 552,459

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1982, 3243981

Int. Cl.⁴ C07C *51/09, 51/15, 69/753*

U.S. Cl. 562—405 **6 Claims**

1. A process for the preparation of fluorene-9-carboxylic acid comprising reacting fluorene and at least a stoichiometric amount of a dialkyl carbonate with alkyls of 1 to 5 carbon atoms in the presence of an at least stoichiometric amount of a member of the group consisting of alkali metal hydrides or potassium alcoholate of an aliphatic alcohol of 1 to 5 carbon atoms, neutralizing the mixture and saponifying the resulting fluorene-9-carboxylic acid ester to obtain fluorene-9-carboxylic acid.

4,564,701

CARBONYLATION PROCESS FOR THE PRODUCTION OF AROMATIC ACIDS

Carl M. Lentz, Mt. Carmel; James R. Overton, and David D. Cornell, both of Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 22, 1985, Ser. No. 693,488

Int. Cl.⁴ C07C *51/10, 51/14*

U.S. Cl. 562—406 **11 Claims**

1. A process for the preparation of aromatic organic acid compounds of the formula

$$ArCOH,$$

which comprises reacting a diaryliodonium salt of the formula

$$\begin{array}{l} Ar \\ | \\ I^{+}\ X^{-}, \\ | \\ Ar' \end{array}$$

wherein Ar and Ar' each independently represents a carbocyclic or heterocyclic aromatic moiety having about 5 to about 20 atoms in the ring or rings thereof and X represents a weak acid anion,

with carbon monoxide in the presence of a zero-valent palladium catalyst in a hydrocarbon acid reaction medium.

4,564,702

HYDROGENATION REACTIONS

Arnold N. Wennerberg, Chicago, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 28, 1983, Ser. No. 489,407

Int. Cl.⁴ C07C *63/04*

U.S. Cl. 562—493 **23 Claims**

1. A method for hydrogenating an alkenyl, alkynyl, aryl, cyano, imino, carbonyl or carboxyl group in one or more organic compounds, comprising: contacting an aforesaid compound with hydrogen under hydrogenation conditions comprising a temperature in the range of from about ambient temperature to about 260° C. with an active carbon catalyst having a cage-like structure and a BET surface area of at least 800 square meters per gram and a bulk density of at least 0.1 gram per cubic centimeter and comprising a substantially uniform dispersion of a metal, metal-containing material, or both in a porous carbon matrix, wherein the dispersed metal and metal in the dispersed metal-containing material are each a transition metal and wherein the total concentration of dispersed metal and dispersed metal-containing material is from about 0.001 to about 30 weight percent, calculated as the elemental metal and based on the weight of the catalyst, wherein the catalyst is formed by a process comprising:

forming a uniform co-crystallite of a precursor of the metal or metal-containing material and of a carbon precursor, wherein the metal in the precursor of the metal or of the metal-containing material is a transition metal;

forming a uniform powdered mixture of the co-crystallite and inorganic solids comprising an alkali metal hydroxide;

pyrolyzing the powdered mixture in an inert atmosphere at a temperature in the range of from about 400° C. to about 980° C. to form the carbon matrix having the metal or metal-containing material substantially uniformly dispersed therein; and

separating unreacted inorganic material and inorganic reaction products, other than the dispersed metal or metal-containing material, from the carbon matrix to form the catalyst.

4,564,703

PROCESS FOR PREPARING METHACRYLIC ACID

Haruhisa Yamamoto, and Shinichi Akiyama, both of Takaoka, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 843,691, Oct. 19, 1977, abandoned. This application Apr. 16, 1979, Ser. No. 30,647

Claims priority, application Japan, Oct. 26, 1976, 51-128665

Int. Cl.⁴ C07C *51/25*

U.S. Cl. 562—534 **6 Claims**

1. In a process for preparing methacrylic acid by the vapor-phase catalytic oxidation of methacrolein or a methacrolein-containing mixture with molecular oxygen in the presence of an oxidation catalyst; the improvement wherein said process comprises

a first-stage oxidation step of oxidizing methacrolein or a methacrolein-containing mixture as a starting material,

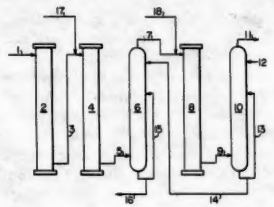
a first-stage separating step of separating the resulting methacrylic acid from the reaction product obtained in the first-stage oxidation step, to form a mixture containing unreacted methacrolein,

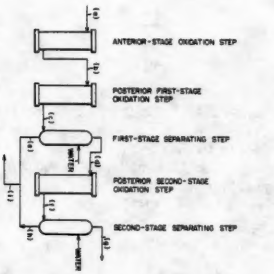
a second-stage oxidation step of oxidizing said mixture containing the unreacted methacrolein, and

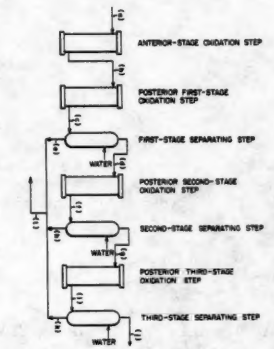
a second-stage separating step of separating the resulting methacrylic acid from the reaction product obtained in the second-stage oxidation step, and

with or without at least one additional oxidation step and

separating step subsequent to the second-stage separating step,







and wherein the conversion of methacrolein in the first-stage oxidation step is adjusted to 30–85 mole% and the final conversion of methacrolein is adjusted to at least 90 mole%.

4,564,704

PRODUCTION OF 3,3-DIMETHYL-2-OXO-BUTYRIC ACID SALT

Karlfried Dickoré, Leverkusen; Hans D. Engels, Solingen; Hans Krätzer, Wuppertal, and Walter Merz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 788,867, Apr. 19, 1977, abandoned, which is a division of Ser. No. 650,651, Jan. 20, 1976, Pat. No. 4,052,460. This application Jan. 22, 1981, Ser. No. 227,552

Int. Cl.⁴ C07C *51/00, 51/285, 51/373*

U.S. Cl. 562—577 **3 Claims**

2. A process for the preparation of a salt of 3,3-dimethyl-2-oxo-butyric acid which comprises introducing into pinacolone twice the molar amount of chlorine, the exothermic reaction mass being cooled initially to maintain the temperature below about 50° C. until about 60 to 80% as the chlorine has been introduced, then heating the reaction mass to a temperature above 50° C. during introducing of the remainder of the chlorine, thereby to produce dichloropinacolone, terminating chlorine introduction when the dichloropinacolone content of the reaction mass is at least about 97%, adding the molten dichloropinacolone to an aqueous solution of an alkali maintained at a temperature of at least about 50° C., the alkali being present in more than three times the molar amount of the dichloropinacolone, thereby to produce a solution of a salt of 3,3-dimethyl-2-hydroxy-butyric acid of at least about 95% purity, contacting said solution at a pH of about 9 to 12 with approximately the stoichiometric amount of a permanganate, and separating the readily filterable coarsely crystalline MnO_2 which is formed from the substantially pure dissolved salt of 3,3-dimethyl-2-oxo-butyric acid.

4,564,705

BIS(AMINONEOPENTYL) AROMATICS

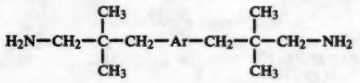
August H. Frazer, and John F. Harris, Jr., both of Wilmington, Del., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 804,853, Jun. 8, 1977, abandoned. This application May 21, 1981, Ser. No. 266,058

Int. Cl.⁴ C07C *87/28*

U.S. Cl. 564—337 **6 Claims**

1. The aromatic-aliphatic diamine of the formula



in which Ar is an arylene selected from the group consisting of 1,2-phenylenes, 1,3-phenylenes, 1,4-phenylenes, 2,2′-biphenylenes, 3,3′-biphenylenes, 4,4′-biphenylenes and 2,6-naphthylenes, said arylene being unsubstituted or substituted with methyl or chloro.

4,564,706

PROCESS FOR THE PREPARATION OF PROPARGYL AMINES

Zoltán Ecsery; Éva Somfai; Judit Hermann née Vörös, all of Budapest; Lajos Nagy, Szentnedre; Gabor Szabo, Budapest; Otto Orban, Budapest, and Laslzo Arvai, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

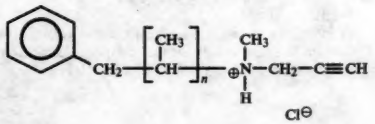
Filed Jul. 14, 1983, Ser. No. 514,149

Claims priority, application Hungary, Jul. 14, 1982, 2278/82

Int. Cl.⁴ C07C *87/28, 85/04*

U.S. Cl. 564—376 **6 Claims**

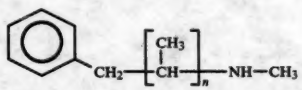
1. A process for the preparation of a salt of the Formula (I)



wherein n=0 or 1

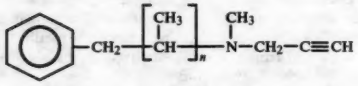
which comprises the steps of:

(a) dissolving a free base of the Formula (II)



in a water, non-miscible organic solvent and propargylating said free base with a compound of the Formula (III)

wherein X is halo, in the presence of an alkali and water at 40°–70° C. to yield a mixture of the unreacted free base of the Formula (II) and a free base of the Formula (IV)



in a two-phase system containing an organic phase and a first aqueous phase;

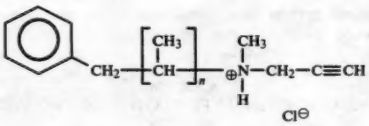
(b) separating the organic phase which contains the mixture of the free base of the Formula (II) and the free base of the Formula (IV) from the first aqueous phase;

(c) treating the organic phase containing the mixture of the free base of the Formula (II) and the free base of the Formula (IV) with water and an amount of acid sufficient to adjust the pH of the solution to 6.5 to 7 to selectively dissolve, in a second two-phase system thus formed, a salt of the compound of the Formula (II) in the aqueous phase while the free base of the Formula (IV) remains in the organic phase;

(d) separating the aqueous phase from the organic phase; and

(e) treating the organic phase containing the free base of the Formula (IV) with hydrogen chloride to precipitate the salt of the Formula (I).

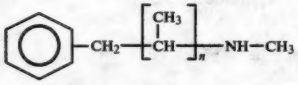
6. A process for the preparation of a salt of the Formula (I)



wherein n=0 or 1

which comprises the steps of:

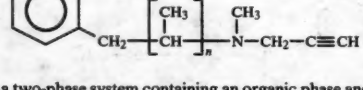
(a) alkali decomposing an aqueous suspension of the D-tartarate of the l-isomer of a compound of the Formula (II)



with an alkali, to obtain the free base of the Formula (II) without isolation;

(b) dissolving the free base of the Formula (II) in a water, non-miscible organic solvent and propargylating said free base with a compound of the Formula (III)

wherein X is halo, in the presence of an alkali and water at 40° to 70° C. to yield a mixture of the unreacted free base of the Formula (II) and a free base of the Formula (IV)



in a two-phase system containing an organic phase and a first aqueous phase;

(c) separating the organic phase which contains the mixture of the free base of the Formula (II) and the free base of the Formula (IV) from the first aqueous phase;

(d) treating the organic phase containing the mixture of the free base of the Formula (II) and the free base of the Formula (IV) with water and an amount of acid sufficient to adjust the pH of the solution to 6.5 to 7 to selectively dissolve, in a second two-phase system thus formed, a salt of the compound of the Formula (II) in the aqueous phase while the free base of the Formula (IV) remains in the organic phase;

(e) separating the aqueous phase from the organic phase; and

(f) treating the organic phase containing the free base of the Formula (IV) with hydrogen chloride to precipitate the salt of the Formula (I).

4,564,707

LINEAR N,N'-TETRASUBSTITUTED DIAMINES AND PROCESS FOR THEIR PREPARATION

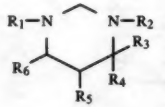
Bernardus A. Oude Alink, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 873,322, Jan. 30, 1978, Pat. No. 4,281,126. This application Mar. 19, 1981, Ser. No. 245,469

Int. Cl.[4] C07C *85/20*

U.S. Cl. 564—413 **10 Claims**

1. A process which comprises reacting a compound of the formula



where R_1 and R_2 are alkyl, alkenyl, aryl, cycloalkyl, arakyl or heterocyclic groups or amino substituted derivatives thereof and R_6, R_5, R_4 and R_3 are hydrogen or substituted groups with formaldehyde and formic acid.

4,564,708

OPTICAL RESOLUTION OF THE RACEMIC MODIFICATION OF 2,2'-BIS(DIPHENYLPHOSPHINO)-1,1'-BINAPHTHYLDIOXIDE

Misao Yagi, and Susumu Akutagawa, both of Kanagawa, Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1984, Ser. No. 582,710

Claims priority, application Japan, Feb. 28, 1983, 58-30799

Int. Cl.[4] C07F *9/53*

U.S. Cl. 568—14 **4 Claims**

1. A process for the optical resolution of dl-2,2'-bis(diphenylphosphino)-1,1'-binaphthyldioxide which comprises reacting dl-2,2'-bis(diphenylphosphino)-1,1'-binaphthyldioxide with any one of the optically active resolving agents d-camphor-10-sulfonic acid, l-camphor-10-sulfonic acid, d-3-bromocamphor-10-sulfonic acid or l-3-bromocamphor-10-sulfonic acid in a lower alkyl ester of acetic acid containing a lower alkyl carboxylic acid, thereby forming diastereomeric salts; and resolving said diastereomeric salts to afford the optically active isomers, and wherein said resolving agents are used in the amount of about 1 to 5 moles per mole of dl-DINAPO, and said lower alkyl ester of acetic acid is used in the amount of about 2 to 5 times by weight of the amount of dl-DINAPO, and wherein said lower alkyl carboxylic acid is used in an amount of about 1 to 20 times by mole per mole of dl-DINAPO.

4,564,709

PROCESS FOR THE PRODUCTION OF DIALKYL-TRISULFIDES

Yuichiro Koyama, Yokohama; Hiroshi Nakazawa, Nagano; Toshiaki Yamashita, Myoko, and Hitoshi Moriyama, Jyoetsu, all of Japan, assignors to Pennwalt Corporation, Philadelphia, Pa.

PCT No. PCT/JP83/00042, § 371 Date Oct. 7, 1983, § 102(e) Date Oct. 7, 1983, PCT Pub. No. WO83/02273, PCT Pub. Date Aug. 18, 1983

PCT Filed Feb. 12, 1983, Ser. No. 545,392

Claims priority, application Japan, Feb. 13, 1982, 57-21492

Int. Cl.[4] C07C *149/12, 148/00*

U.S. Cl. 568—26 9 Claims

1. A process for the selective production of dialkyl trisulfides which consists essentially of reacting sulfur and an alkyl mercaptan at a quantitative ratio in the range of 0.5 gram atom to 1.0 gram atom of sulfur to 1 mol of alkyl mercaptan in the presence of magnesium oxide in an amount of 0.1 to 3 percent by weight of said alkylmercaptan and carried out at a temperature in the range of 30° C.–100° C.

4,564,710

PROCESS FOR MAKING MERCAPTO ALCOHOLS

Barry N. Steger, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 8, 1984, Ser. No. 669,558

Int. Cl.[4] C07C *148/00*

U.S. Cl. 568—62 10 Claims

1. In a process wherein a mercapto alcohol is produced by the reaction of H_2S with a vicinal epoxide under suitable reaction conditions, excess H_2S is separated from the mercapto alcohol product and compressed for reuse, the improvement comprising subjecting the separated excess H_2S to reaction conditions sufficient to cause entrained epoxide to be converted to the mercapto alcohol before the separated H_2S is subjected to compression.

4,564,711

HYDROFORMYLATION CATALYST AND PROCESS

Chao-Yang Hsu, Media, and Paul E. Ellis, Jr., Downingtown, both of Pa., assignors to Sun Refining And Marketing Company, Philadelphia, Pa.

Division of Ser. No. 598,935, Apr. 11, 1984. This application May 9, 1985, Ser. No. 732,313

Int. Cl.[4] C07C *45/50*

U.S. Cl. 568—454 13 Claims

1. In the process of hydroformylating an olefin having from about 2 to 20 carbon atoms by reacting the olefin with hydrogen and carbon monoxide at elevated pressures in the presence of a catalyst to produce an aldehyde, the improvement of using as the catalyst a catalyst system which comprises (1) a platinum (II) (acetylacetonate); (2) a Group IVB metal halide; and (3) a bidentate tertiary ligand of the formula:

$$R_1R_2Q(CH_2)_mQR_3R_4; \text{ or } R_1R_2QCH_2\text{—}\underset{\displaystyle\ulcorner(CH_2)_n\urcorner}{CH}\text{———}CH\text{—}CH_2QR_3R_4$$

wherein Q is arsenic, antimony, or phosphorus; and R_1, R_2, R_3 and R_4 are alkyl, aryl, alkoxyl, or aryloxyl groups, and may be the same or different, m is an integer of from 3 to about 5; and n is an integer of from 2 to about 4.

4,564,712

PROCESS FOR THE PREPARATION OF DIPHENYL ETHERS

Herbert Kuckertz, Kelkheim, and Georg Schaeffer, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 315,933, Oct. 28, 1981, abandoned. This application Nov. 23, 1983, Ser. No. 554,378

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1980, 3040849

Int. Cl.[4] C07C *41/16*

U.S. Cl. 568—635 10 Claims

1. In a process for preparing diphenyl ethers, which includes reacting an alkali metal phenolate with a halobenzene at elevated temperature and in the presence of a copper compound as catalyst, the improvement which comprises using as the copper compound a basic copper carbonate of the formula

$$xCuCO_3.Cu(OH)_2.yH_2O$$

wherein

x=1 to 2 and

y=0 to 1

and carrying out the reaction at a temperature of from about 130° to 170° C.

4,564,713

PROCESS FOR PRODUCING 4,4'-DIHYDROXYDIPHENYLS

Makoto Imanari; Hiroshi Iwane, and Takahiro Sugawara, all of Inashiki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

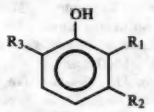
Filed Jan. 11, 1985, Ser. No. 690,614

Claims priority, application Japan, Jan. 23, 1984, 59-9856

Int. Cl.[4] C07C *39/14, 39/15*

U.S. Cl. 568—730 9 Claims

1. A process for producing 4,4'-dihydroxydiphenyls comprising dimerizing alkylphenols represented by the formula:



wherein R_1 and R_3 each represents a straight or branched chain alkyl group having 1 to 12 carbon atoms and R_2 is a hydrogen atom or a straight or branched chain alkyl group having 1 to 12 carbon atoms, in an aqueous solution of pH 7 to 12 containing a surfactant in the presence of an oxidizing agent selected from the group consisting of oxygen and an oxygen-containing gas, said dimerization being conducted at 40°–100° C. in the presence of a copper compound selected from the group consisting of halides, basic halohydroxides, carboxylates, sulfates, nitrates, alkylsulfates, arylsulfates, carbonates, basic carbonates, hydroxides and chlorates of copper, and a material selected from the group consisting of (a) a basic boron compound selected from the group consisting of lithium metaborate, sodium metaborate, sodium perborate, lithium tetraborate, borax, trimethoxyborane and triphenoxyborane, and (b) a mixture of a basic substance selected from the group consisting of hydroxides, carbonates and bicarbonates of alkali metals and a boron compound selected from the group consisting of boric acid, boron oxide, lithium metaborate, sodium metaborate, sodium perborate, lithium tetraborate, borax, trimethoxyborane and triphenoxyborane.

4,564,714

PROCESS FOR THE PREPARATION OF 2,4,5-TRICHLOROPHENOL UNDER ACIDIC CONDITIONS

Joseph A. Virgilio, Wayne, and Joachim E. Freudewald, Basking Ridge, both of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Filed Oct. 30, 1984, Ser. No. 666,411
Int. Cl.[4] C07C *39/32*
U.S. Cl. 568—776 11 Claims

1. A process for manufacture of 2,4,5-trichlorophenol which comprises reacting 2,5-dichlorophenol with sulfuryl chloride in the presence of diphenylsulfide and sulfuric acid at a temperature between minus ten degrees centigrade (−10° C.) and twenty-five degrees centigrade (25° C.).

4,564,715

PREPARATION OF MONOALKYLENE GLYCOLS IN TWO STAGES

John R. Briggs; George L. O'Connor, and John H. Robson, all of Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 594,256, Mar. 28, 1984, abandoned. This application Oct. 23, 1984, Ser. No. 663,828
Int. Cl.[4] C07C *31/20, 33/26, 35/14, 33/035*
U.S. Cl. 568—867 22 Claims

1. A process for making alkylene glycols comprising contacting alkylene oxide with a selectivity enhancing, dissociatable, metalate anion-containing material under conditions sufficient to associate at least a portion of the alkylene oxide with the metalate anion, said contacting being in the substantial absence of polyglycol forming amounts of water; and then contacting with water the metalate anion associated with alkylene oxide under conditions sufficient to form alkylene glycol.

4,564,716

PREPARATION OF 1,1,1,3,3,3-HEXAFLUOROPROPANE-2-OL BY HYDROGENOLYSIS OF HEXAFLUOROACETONE HYDRATE

Yutaka Katsuhara, Kawagoe; Toshihiro Nakamichi, Kamifukuoka; Toshikazu Kawai, Kawagoe, and Toru Nakazora, Saitama, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Sep. 27, 1984, Ser. No. 654,876
Claims priority, application Japan, Sep. 27, 1983, 58-177017
Int. Cl.[4] C07C *31/38*
U.S. Cl. 568—842 12 Claims

1. A process for preparing 1,1,1,3,3,3-hexafluoropropane-2-ol, comprising the steps of adding to a hexafluoroacetone hydrate 0.1 to 0.5% aluminum hydroxide by weight of said hexafluoroacetone hydrate and contacting the mixture of hexafluoroacetone hydrate and aluminum hydroxide with hydrogen gas in the liquid phase in the presence of a catalyst which is active for hydrogenolysis of said hexafluoroacetone hydrate into 1,1,1,3,3,3-hexafluoropropane-2-ol.

4,564,717

FLUORINE-CONTAINING OLEFIN

Akira Ohmori, Ibaraki; Nobuyuki Tomihashi, Takatsuki; Hiroshi Inukai, and Yoshiki Shimizu, both of Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Sep. 21, 1984, Ser. No. 653,006
Claims priority, application Japan, Sep. 21, 1983, 58-175122
Int. Cl.[4] C07C *33/42;* C08F *12/20*
U.S. Cl. 568—843 1 Claim

1. A fluorine-containing olefin of the formula:

$$CF_2=CF(CF_2)_m(CH_2)_nOH$$

wherein m is an integer of 1 to 10 and n is an integer of 1 to 4.

4,564,718

FUNCTIONALLY TERMINATED POLYMERS FROM TERPENE MONOMERS AND THEIR APPLICATIONS

Richard H. Still, Disley; John L. Cawse, and John L. Stanford, both of Manchester, all of United Kingdom, assignors to The University of Manchester Institute of Science and Technology, Manchester, England

Filed Aug. 14, 1984, Ser. No. 640,769
Int. Cl.[4] C08F *2/38;* C07C *13/00*
U.S. Cl. 585—350 19 Claims

1. A method of preparing a liquid prepolymer having an average functionality greater than one comprising polymerising terpene monomer having a double bond or conjugated double bond available for polymerisation in a solvent with at least about two mole percent, based on the molar amount of monomer component, of an initiator having a grouping which provides or is a precursor of, the functional termination for the prepolymer.

4,564,719

CATALYSTS OVER ALF_3 ACTIVATED HIGH SILICA ZEOLITES

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 581,497, Feb. 17, 1984, Pat. No. 4,530,756, which is a continuation-in-part of Ser. No. 333,370, Dec. 22, 1981, Pat. No. 4,444,902. This application May 13, 1985, Ser. No. 733,338
Int. Cl.[4] C07C *1/20*
U.S. Cl. 585—640 22 Claims

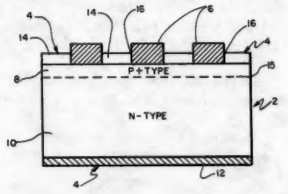
1. A process for converting a feedstock comprising organic compounds selected from the group consisting of alcohol, carbonyl, ether and mixtures thereof to conversion products comprising hydrocarbon compounds which comprises contacting said feedstock at conversion conditions with a catalyst composition comprising a crystalline zeolite having an initial silica:alumina mole ratio of at least about 100:1 prepared by a method which comprises calcining the zeolite at a temperature of from about 200° C. to about 600° C. for a period of time ranging from about 1 minute to about 48 hours, contacting said calcined zeolite with from about 0.1 to about 1 gram of solid aluminum fluoride per gram of zeolite at a temperature of from about 0° C. to about 650° C., and converting said aluminum fluoride contacted zeolite to hydrogen form.

4,564,720

PURE SILVER OHMIC CONTACTS TO N- AND P- TYPE GALLIUM ARSENIDE MATERIALS

Stephen J. Hogan, Golden, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 13, 1983, Ser. No. 494,485
Int. Cl.[4] H01L *31/04, 31/18*
U.S. Cl. 136—256 4 Claims



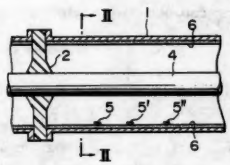
4. A gallium arsenide semiconductor device comprising: an n-type substrate layer, said n-type substrate layer being doped to doping carrier concentrations of less than 1×10^{18} cm^{-3}; a p-type diffused layer doped to a doping carrier concentration of less than 6×10^{18} cm^{-3}; and a pure silver ohmic contact system, and wherein said n-type layer includes a first pure silver ohmic contact thereon and said p-type layer includes a second pure silver ohmic contact thereon.

4,564,721

GAS-INSULATED ELECTRICAL APPARATUS WITH ELECTRET FOR CAPTIVATING CONDUCTIVE PARTICLES AND METHOD OF REMOVING SUCH PARTICLES DURING ASSEMBLY THEREOF

Toshio Ishikawa; Fumihiro Endo; Tokio Yamagiwa, and Yuzuru Kamata, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 17, 1985, Ser. No. 724,200
Claims priority, application Japan, Apr. 18, 1984, 59-76500; Sep. 5, 1984, 59-184494
Int. Cl.[4] H02G *5/06;* H02B *13/06;* H02G *1/00*
U.S. Cl. 174—10 15 Claims



1. A gas-insulated electric apparatus comprising:
a metallic tubular member hermetically sealed with an insulating gas;
a high-voltage conductor supported by insulating supports in said metallic tubular member; and
at least one insulating layer disposed in said metallic tubular member, said insulating layer being an electret made of a high polymeric material capable of holding charges therein semi-permanently.

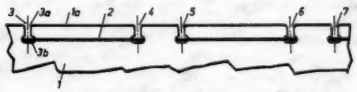
10. A method of removing conductive particles which intrude into or generate in a gas-insulated electric apparatus during assembly work thereof, the apparatus comprising a metallic tubular member and a high-voltage conductor supported by insulating support members in said metallic tubular member, comprising the steps of:
inserting at least one insulating layer made of an electret of high polymeric material capable of holding charges semi-permanently, into said gas-insulated electric apparatus, so that the conductive particles floating in said gas-insulated electric apparatus may be attracted to the surface of said insulating layer;
taking out said conductive particles from said gas-insulated electric apparatus together with said insulating layer; and
hermetically sealing an insulating gas in said metallic tubular member.

4,564,722

CONTACTING DEVICE FOR PROTECTING ELECTRONIC COMPONENTS AGAINST ELECTROMAGNETIC RADIATION

Jerry K. G. Nordin, Mandolinvägen, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Oct. 26, 1984, Ser. No. 665,176
Claims priority, application Sweden, Oct. 27, 1983, 8305908
Int. Cl.[4] H05K *9/00*
U.S. Cl. 174—35 GC 2 Claims



1. A contacting device for shielding electronic components against electromagnetic radiation, said device comprising a metallic casing having removable sheet metal walls, a contact strip achieving electrically conductive contact between the sheet metal walls, the contact strip comprises a flexible elongate band, continuously extending along one of said sheet metal walls, and retaining means for the strip in the form of cut-outs along the edge of the wall, the strip being fixed in said cutouts so that the strip is given a continuous wave form running on both sides of the wall.

4,564,723

SHIELDED RIBBON CABLE AND METHOD

Donald D. Lang, Garden Grove, Calif., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 21, 1983, Ser. No. 553,651
Int. Cl.[4] H01B *13/06, 7/08, 7/34*
U.S. Cl. 174—36 9 Claims

1. A method of making shielded ribbon cable, comprising the steps of providing a length of ribbon cable having a plurality of laterally spaced conductors including first and second edge conductors adjacent first and second respective laterally

spaced edge portions of said cable, the remaining conductors being surrounded by an insulating layer;

covering at least one of said first and second edge conductors with a layer of a first conductive material;

enclosing said ribbon cable with an insulating material;

trimming at least one of said first and second edge portions of said cable to expose at least a portion of at least one of said first and second edge conductors and said first conductive material at said at least one edge portion of said cable; and

coating the trimmed ribbon cable with a second conductive material such that said second conductive material is in electrical contact with both the exposed portion of at least one of said first and second edge conductors, and said first conductive material adjacent said exposed portion to shield said cable.

5. A shielded ribbon cable, comprising:

a plurality of longitudinally extending laterally spaced conductors;

said conductors being electrically insulated from each other;

first and second ones of said conductors being disposed adjacent respective first and second edge portions of said ribbon cable;

a first conductive material covering at least one of said first and second ones of said conductors, with a portion of at least one of said first and second ones of said conductors having been trimmed so as to be free of said first conductive material;

a second conductive material surrounding said ribbon cable and being in electrical contact with said at least said one of said first and second ones of said conductors along substantially the entire length thereof and said portion of said at least one of said first and second ones of said conductors which is free of said first conductive material, said second conductive material shielding said ribbon cable,

said at least one of said first and second ones of said conductors being a drain conductor for said shielded cable.

4,564,724

TERMINAL INTERFACE CONNECTING TERMINAL UNIT HAVING CENTRAL OFFICE LINE INTERFACE TO KEY TELEPHONE SYSTEM

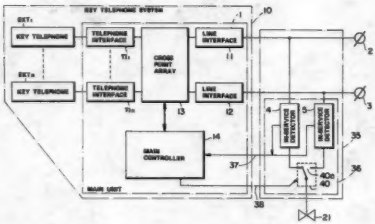
Yasunobu Nakayama, Musashino; Yasuji Sato, Hachioji, and Shinichi Shibata, Hino, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed May 23, 1984, Ser. No. 613,203

Claims priority, application Japan, May 31, 1983, 58-095039

Int. Cl.[4] H04M *3/58*

U.S. Cl. 179—2 A **12 Claims**



1. A terminal interface device for connecting a terminal unit having a central office line interface to a key telephone system comprising: in-service detecting means connected to a selected plurality of central office lines leading to the input terminal of a main unit of said system and also connected to said terminal unit having the central office line interface for detecting the in-service state of said selected respective lines to be used by the terminal unit and for sending an in-service signal indicative of said detected in-service state to said main unit of the system, and switching means controllably switched by a switching control generated from the main unit of the system on the basis of said in-service signal for connecting one of said slected lines to the terminal unit.

4,564,725

TELECOMMUNICATIONS SYSTEM, PARTICULARLY A TELEPHONE EXCHANGE SYSTEM, HAVING OVERLOAD PROTECTED SEQUENTIAL LOGIC SYSTEMS

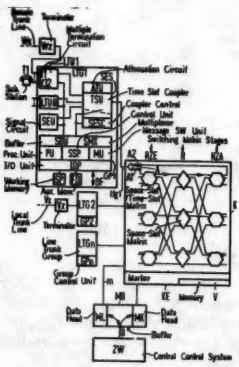
Georg Daisenberger, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 22, 1984, Ser. No. 582,607

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1983, 3311900

Int. Cl.[4] H04M *15/26*

U.S. Cl. 179—8 A **5 Claims**



1. A telecommunications systems comprising:

a plurality of lines and trunks, arranged in groups, for connection to subscriber stations and for carrying call information;

a central information-processing system having a limited call-handling capability with respect to its information-processing capacity;

a central switching network connected to said central information-processing system;

a plurality of partially-centralized switching devices each including a sub-switching matrix network connected to a respective line/trunk group and to said central switching network, and each including switch means operable to receive an intermediately store and transmit call information including line signals, selection identifiers, and line characters to said central information processing system for processing to set up calls between calling and called subscriber stations and for transmitting control signals including alternating current call pulses, audio signals, selection identifiers and line characters over said lines and trunks, and operable to set up incoming and outgoing connections over said central switching network so that a partially-centralized switching device is utilized at least once per through-connection event; and

a plurality of counting means, each including a cyclically-deincremented counter, each counting means connected to a respective partially-centralized switching device and each of said counters incremented in response to seizure of the respective partially-decentralized switching device and operable to produce and transmit an overload signal to the respective switch means of the partially-centralized switching device upon reaching a predetermined count representing a traffic load limiting value to prevent fur-

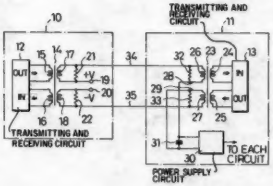
ther seizures thereof during the existence of the overload signal.

4,564,726

PULSE/DIRECT CURRENT TRANSMITTING CIRCUIT IN A KEY TELEPHONE SYSTEM

Kazuo Ibata, Kawasaki, Japan, assignor to Nitsuko Limited, Kanagawa, Japan

Filed May 25, 1984, Ser. No. 614,230
Claims priority, application Japan, Dec. 27, 1983, 58-250322
Int. Cl.[4] H04Q *5/00*; H04M *19/00*
U.S. Cl. 179—99 M **5 Claims**



1. An apparatus for transmitting pulse data and DC-source power concurrently over a pair of transmission lines in a key telephone system including a main operating unit and at least one key telephone set, said main operating unit and said telephone set each including a transformer and a pulse transmitting and receiving circuit having a pair of input terminals and a pair of output terminals; said transformer including a core, a first winding connected across said output terminals, a second winding connected across said input terminals, and a third winding and a fourth winding opposed to said first and second windings, respectively; said third winding of said main operating unit having one terminal connected with one terminal of a DC power source, and another terminal connected with a first line of said pair of transmission lines; said fourth winding of said main operating unit having one terminal connected with another terminal of said DC power source, and another terminal connected with a second line of said pair of transmission lines; said third winding of said telephone set having one terminal connected with said first line, and another terminal connected with one terminal of a power supply circuit; said fourth winding of said telephone set having one terminal connected with another terminal of said power supply circuit, and another terminal connected with said second line; said telephone set including a capacitor connected across the terminals of said power supply circuit, thereby to prevent the DC source power from short-circuiting across said third and fourth windings of said telephone set.

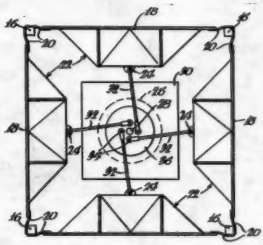
4,564,727

SUBWOOFER SPEAKER SYSTEM

Thomas J. Danley, Highland Park, and Charles A. Rey, Naperville, both of Ill., assignors to Intersonics Incorporated, Northbrook, Ill.

Continuation-in-part of Ser. No. 325,578, Nov. 30, 1981. This application Jan. 12, 1984, Ser. No. 570,237
Int. Cl.[4] H04R *13/02*
U.S. Cl. 179—116 **8 Claims**

1. A subwoofer speaker for producing audible sound at frequencies below 100 Hz, said speaker comprising sound radiating means for producing sound upon reciprocation thereof, drive means for reciprocating said sound radiating means, said drive means comprising an electrical motor having a rotary coil with the active elements thereof continuously immersed in a magnetic field, said coil exhibiting a substantially constant force per unit of excitation current irrespective of the rotary position of the coil, a rotary output shaft connected to the coil, and means for connecting said shaft to said sound radiating means.

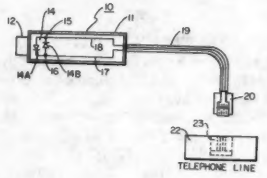


4,564,728

APPARATUS FOR TESTING A TELEPHONE LINE

Robert P. Romano, Glen Ridge, N.J., assignor to Comus International, Inc., Nutley, N.J.

Filed Apr. 13, 1984, Ser. No. 599,820
Int. Cl.[4] H04B *3/46*
U.S. Cl. 179—175.3 R **7 Claims**



1. A telephone line tester apparatus for determining the operation of a telephone line supplying central office battery voltage and of the type terminating in a female receptacle for receiving a male receptacle associated with the telephone subset, comprising:

a light emitting diode wherein said light emitting diode is a bipolar light emitting diode consisting of a first light emitting diode in parallel with a second light emitting diode of opposite polarity having first and second terminals coupled to first and second wires,

a male telephone plug coupled to said wires and adapted to coact with said female receptacle, whereby when said male telephone plug is inserted in said receptacle, said diode illuminates providing a visual indication to the user of proper operation of said telephone line, independent of the polarity of the central office battery as coupled to said telephone plug.

4,564,729

TELEPHONE ILLUMINATION CIRCUIT

Kenneth R. Mills, Syracuse, N.Y., assignor to General Electric Company, Portsmouth, Va.

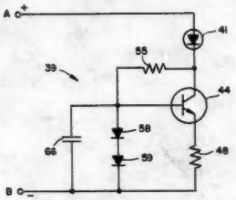
Filed Feb. 27, 1984, Ser. No. 583,711
Int. Cl.[4] H04M *1/22*
U.S. Cl. 179—81 C **7 Claims**

1. In a telephone circuit including a telephone line having DC and AC operating voltages, including voice signals, thereon during telephone operation, an illumination circuit comprising:

a light emitting means for illuminating a portion of the telephone, and

current control means connected in series with said light

emitting means across the telephone line, said current control means adapted to maintain high AC impedance



over the entire range of AC and DC operating voltages to protect the quality of AC voice signals on the telephone line.

4,564,730

ELECTRICAL SWITCH

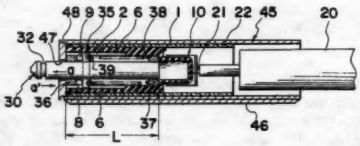
Motoyuki Tomizu, and Kunio Nagata, both of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Aug. 16, 1984, Ser. No. 641,560

Claims priority, application Japan, Aug. 16, 1983, 58-127136[U]; Aug. 23, 1983, 58-130721[U]; Sep. 16, 1983, 58-143772[U]; Sep. 22, 1983, 58-146776[U]

Int. Cl.⁴ H01H *15/00, 3/16*

U.S. Cl. 200—16 B **5 Claims**



1. An electrical switch which comprises a casing formed into a cylindrical configuration with a pair of recesses being formed on an outer peripheral face of said casing in opposed positions along said outer peripheral surface, a pair of fixed contacts each formed by cutting a rod member into a predetermined length, and disposed in the casing to confront each other, each of said pair of fixed contacts being connected to a corresponding end of a lead terminal made of an electrically conductive thin plate, with the other end of said lead terminal being connected to a core wire of an external cord, said lead terminal being fitted into said recesses of said casing, a plunger slidably accommodated in said casing for movement in an axial direction, a bearing member within said casing slidably supporting said plunger, a movable contact formed by cutting a rod member into a predetermined length and mounted to an intermediate portion of said plunger in a direction intersecting with said fixed contacts, and a restoring means within said casing directed around the outer periphery of said plunger, said movable contact being restored together with said plunger to close said pair of fixed contacts in a free state.

4,564,731

SCISSOR-TYPE DISCONNECT SWITCH WITH CONTACT ELEMENTS HAVING WEAR-RESISTANT ARMATURES

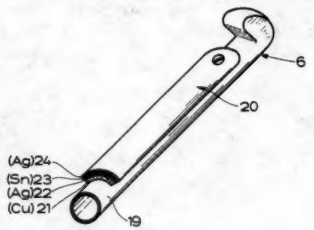
Alfred Hartig, Essen, Fed. Rep. of Germany, assignor to Ruhrtal-Elektrizitatsgesellschaft Hartig GmbH & Co., Essen, Fed. Rep. of Germany

Filed Mar. 17, 1983, Ser. No. 476,358

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1982, 3209667; Sep. 24, 1982, 3235379; Sep. 24, 1982, 3235380

Int. Cl.⁴ H01H *1/02*

U.S. Cl. 200—269 **17 Claims**



1. In an electrical switch comprising a first contact element fixedly secured to a power line, and a pair of mutually symmetrical second contact elements constituting extremities of a pair of scissor arms operable to grip said first contact element between them for connecting said power line to a load circuit,

the improvement wherein said first contact element comprises a metallic supporting rod of cylindrical shape with a reduced-diameter longitudinal cylindrical section and a pair of wear-resistant conductive part-cylindrical face plates respectively confronting said second contact elements while being detachably countersunk in said reduced-diameter section, each of said face plates having a thickness substantially corresponding to the difference between the radii of said reduced-diameter section and a pair of adjoining rod sections whereby said face plates have outer surfaces substantially flush with those of said adjoining rod sections, wherein each of said face plates comprises several metallic layers including an inner layer of silver overlain by a protective layer of tin, the latter being juxtaposed with an outer layer of silver engageable with a silver surface of the confronting second contact element.

4,564,732

DOVETAIL BASE ASSEMBLY FOR KEYSWITCHES

Eldon R. Lancaster, Anaheim; Manual T. Guest, Temple City, and Robert W. Bessire, Anaheim, all of Calif., assignors to Hi-Tek Corporation, Garden Grove, Calif.

Continuation of Ser. No. 379,961, May 19, 1982, abandoned. This application Oct. 18, 1984, Ser. No. 661,888

Int. Cl.⁴ H01H *9/02*

U.S. Cl. 200—307 **14 Claims**

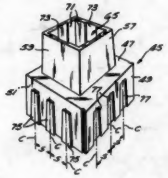
1. A modular base assembly for constructing a keyswitch array, comprising:

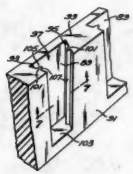
a foundation base module having a plurality of receptacles for receiving and supporting keyswitch elements, said receptacles grouped to form a standard typewriter key matrix;

plural accessory base modules, each having at least one receptacle for receiving and supporting keyswitch elements;

coupling means, comprising a flange and a recess, for coupling said accessory base modules to said foundation base module to form said keyswitch array, said coupling means including first and second contact surfaces, said first surface comprising a crush rib disposed on the sidewalls of

said recess, said crush rib being adapted to deform when said base modules are coupled by engagement of said first and second contact surfaces, said second surface being





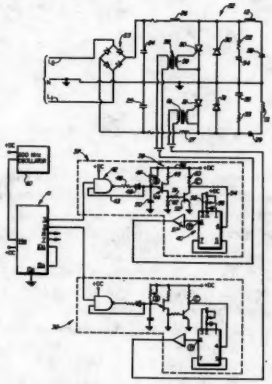
more rigid than said first surface and adapted to tightly engage said first surface to provide interfering engagement between said flange and recess and to restrict movement between said flange and said recess.

4,564,733

CURRENT LIMITING CONTROL CIRCUIT FOR INDUCTION RANGE

Joseph Karklys, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 11, 1983, Ser. No. 522,806
Int. Cl.[4] H05B *6/06*
U.S. Cl. 219—10.77 **18 Claims**



1. In a range having at least two electrically energizable heating units, and control means selectively operable to cause energization of said heating units with an electrical current having an initial inrush buildup, the improvement comprising

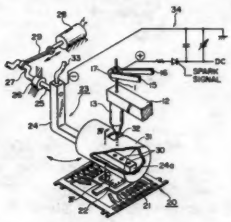
circuit means for causing initiation of energization of a second of said heating units substantially at the time the inrush current of a first heating unit reaches its peak following initiation of energization of said first heating unit in the event said control means is operated to attempt to initiate energization of both heating units simultaneously.

4,564,734

WIRE BONDER

Susumu Okikawa, Ohme, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1983, Ser. No. 476,268
Claims priority, application Japan, Mar. 31, 1982, 57-51237
Int. Cl.[4] B23K *31/00*
U.S. Cl. 219—56.22 **31 Claims**



1. A wire bonder for forming a ball at a free tip of a bonding wire by electrical discharge between the tip and an electrode comprising:

a wire conveying tool by which the bonding wire is guided;

a wire clamper for clamping said bonding wire;

a discharge electrode assembly carrying said electrode which is rotatable between a first angular position in which said assembly is located at a position displaced away from the free tip and a second angular position in which said assembly is located adjacent said free tip at a position where said electrical discharge can occur, said assembly being rotatably mounted on a pivot point and having said electrode being joined to said assembly, said electrode having a cover defining a chamber with an open portion for permitting the cover to swing into a position to surround the tip of the free end of the wire when pivoted into the second angular position;

means for introducing a dry reducing gas atmosphere into said chamber chosen from the group consisting of H_2, CO, N_2O or CH_4;

a power source for applying a potential of one polarity to said clamper and of an opposite polarity to said discharge electrode;

said wire being biased by said power supply at a positive potential and said electrode being biased by said power supply at a negative potential; and

said means for introducing a gas atmosphere comprising an electrical conductor which is part of said discharge electrode and having a hollow portion with a plurality of holes communicating with said chamber to permit the gas atmosphere to be introduced into said chamber.

5. A method for forming a ball at the free tip of a metallic wire which forms an oxide that effects the sphericity of the ball when an electrical discharge between the tip and an electrode is used to form the ball comprising:

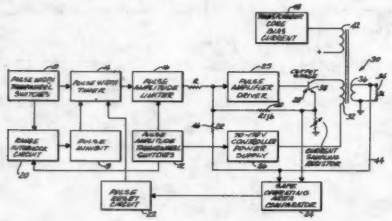
positioning the tip of the wire at a position displaced by a gap from the electrode across which a discharge can be produced by the application of an electrical potential of a magnitude sufficient to cause the discharge; and

providing a dry reducing gas atmosphere prior to discharge chosen from the group H_2, CO, N_2O or CH_4 which envelops the gap between the tip and the electrode at the time of the discharge between the tip and the electrode to form said ball.

4,564,735
DIRECT CURRENT PULSE WELDER

Gerald Dufreane, LaVerne, Calif., assignor to Unitek Corporation, Monrovia, Calif.

Filed Mar. 30, 1984, Ser. No. 595,059
Int. Cl.[4] B23K *11/24*
U.S. Cl. 219—110 11 Claims



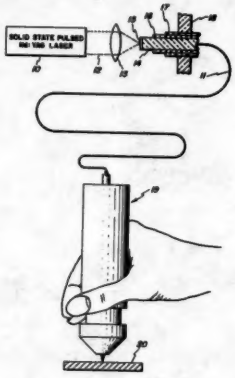
1. A direct current resistance spot welder comprising:
pulse amplifying means having an input and an output side for generating a welding energy pulse;
electric circuit means interconnecting the output side of the amplifying means to welding electrodes of the welder;
voltage feedback means interconnected between the output and input sides of the amplifying means in a first feedback path to supply a voltage feedback signal to the input side;
current feedback means interconnected between the output and input sides of the amplifying means in a second feedback path to supply a current feedpack signal to the input side; and
a source of power electrically coupled to the pulse amplifying means and the electric circuit means for delivering energy through the amplifying means to the welding electrodes whereby the voltage and current feedback signals from the feedback means are summed to control the output impedance of the welder and produce an essentially constant voltage-current product at the welding electrodes.

4,564,736
INDUSTRIAL HAND HELD LASER TOOL AND LASER SYSTEM

Marshall G. Jones, Scotia, N.Y., and Donald C. Richardson, Lynn, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed May 7, 1984, Ser. No. 608,042
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121 L 8 Claims

1. A laser system for manual material processing comprising:
a laser which produces a near infrared or visible wavelength beam;
a single fiber optic serving as a lightguide;
an input coupler to shape said laser beam to enter said fiber optic which transmits laser energy to the output end with peak powers in the kilowatt range; and
a hand held laser tool comprised of means for holding the output end of said fiber optic, means for focusing the emerging beam to a small spot at a high enough power density to do industrial laser material processing, and means for delivering process assist gas;
said fiber optic having a core, a cladding and protective shielding, and both ends of said fiber are prepared to reduce Fresnel losses by removal of said cladding and

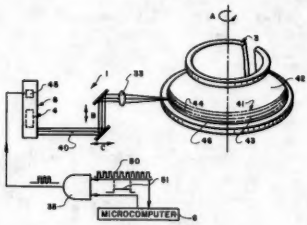


shielding for a short distance and removal of only said cladding for an equal distance.

4,564,737
AUTOMATIC LAYOUT MACHINE FOR TIRE TREAD PATTERNS

Victor B. Burke, and Charles R. Burkholder, both of Akron, Ohio, assignors to F.M.P. Enterprise, Inc., Akron, Ohio

Filed Jul. 11, 1983, Ser. No. 512,363
Int. Cl.[4] B23K *26/08*
U.S. Cl. 219—121 LH 17 Claims



1. An automatic layout machine for marking a tire tread pattern on an object such as a model block or blank tire, said machine including:
(a) turntable means for rotatably mounting an object to be marked;
(b) laser means for producing a laser pulse;
(c) optic means for directing the laser pulse from the laser means against the object to mark said object;
(d) means for positioning the optic means in relationship to the rotation of the turntable means to control the contact point of the laser pulse on the object; and
(e) means for firing the laser means in a raster scan at predetermined position intervals of the rotating object to mark the object at predetermined points as the object is rotated by the turntable means, to define a tire tread pattern on the object upon a predetermined number of revolution of said turntable means; and
in which the fire means includes rotary encoder means for generating a predetermined number of counts per revolution of the turntable means, certain of said counts causing the laser means to produce the laser pulse; and computer means

containing the tire tread pattern communicating with the rotary encoder to specify intervals during which the laser pulse is produced in response to said certain counts from the rotary encoder means to mark the object; and

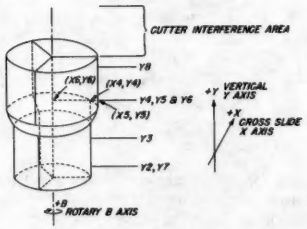
in which the counts of the rotary encoder means are applied to a gate; in which a signal is applied to said gate from the computer means, said signal being derived in relationship to the tire tread pattern contained in said computer means; and in which an output signal from said gate fires the laser means.

4,564,738

METHOD FOR ALIGNMENT OF AN ELECTRON BEAM TO THE ADJACENT FACES OF SEGMENTS OF ROCK DRILL BITS

Jeffrey M. Estes, Downers Grove, Ill., assignor to Sciaky Bros., Inc., Chicago, Ill.

Filed Nov. 14, 1983, Ser. No. 551,483
Int. Cl.⁴ B23K *15/00*
U.S. Cl. 219—121 ED **6 Claims**



1. In a process for welding segments of a cylindrical workpiece along the abutting surfaces of adjoining segment surfaces utilizing a high energy particle beam which is arranged to move along two axes which are mutually perpendicular, the steps of:

fabricating the said segments so as to form at least two sections of differing radii on the assembled workpiece;

clamping the segments which form the said cylinder to a table arranged to rotate the said cylinder about its longitudinal axis;

positioning the said high energy particle beam so that it impinges upon a point at the outer edge of one of said abutting surfaces and recording the coordinates of said point of impingement with respect to said axes;

positioning the said beam so that it impinges upon a second point at the outer edge of the aforesaid abutting surface in the same section as the first point and recording the coordinates of said second point of impingement;

determining by extrapolation from the first two mentioned points a third point within the second section of the cylinder which is greater in radius than the first-mentioned section of cylinder and recording the coordinates of said third point;

positioning the beam so that it will pass through the third point which is inside the cylinder;

moving the beam so that it impinges upon a point at the outer edge of the abutting surfaces at the second of said cylindrical sections of different radii and recording the coordinates of said point of impingement;

determining by extrapolation along a line passing through the last-mentioned two sets of coordinates towards the center of said cylinder, the position of another point at a distance equal to the radius of the cylinder section from said point at the outer edge of said abutting surfaces and moving the beam so that it is in alignment with said point;

moving the rotary table so that the beam will pass through a point at the outer edge of the abutting surfaces so that the beam will be parallel to the abutting surfaces to be welded along a line passing through the last-mentioned points; and

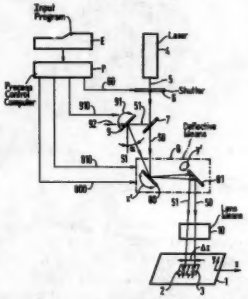
energizing the high energy particle beam at welding power and causing the beam to be moved so that the beam passes through all the points determined above.

4,564,739

APPARATUS FOR LABELING PARTS WITH A LASER

Antoon Mattelin, Oostkamp, Belgium, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 13, 1984, Ser. No. 630,673
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1983, 3333386
Int. Cl.⁴ B23K *26/06*
U.S. Cl. 219—121 LH **8 Claims**



1. In an apparatus for labeling parts, particularly electronic components, said apparatus comprising a laser for creating a laser beam, deflective means for deflecting the laser beam in at least two directions, said deflective means including deflection optics disposed in the beam path of the laser and being controllable in accordance with the labeling job, means for controlling the deflective means, and lens means disposed on the beam path after the deflection optics for focusing the laser beam onto the surface of the part disposed on a work surface of the apparatus, the improvements comprising beam splitter means being disposed in the beam path of the laser for dividing the beam into at least two sub-beams prior to being received by the deflective means, said deflection optics consisting of two deflecting mirrors which are positioned successively in the beam path, each of said mirrors being mounted for rotation about an axis with the axis of one mirror being at right angles to the axis of the other mirror, and means for guiding said sub-beams to the deflective means with a different angle of incidence for each of the sub-beams with respect to the deflective means so that the lens means focuses the sub-beams onto spaced positions to enable labeling at least two parts simultaneously.

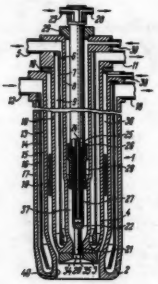
4,564,740
METHOD OF GENERATING PLASMA IN A PLASMA-ARC TORCH AND AN ARRANGEMENT FOR EFFECTING SAME

Boris E. Paton, ulitsa Chkalova, 41-a, kv. 26; Gary A. Melnik, ulitsa Prazhskaya, 3, kv. 169; Jury V. Latash, ulitsa Artema, 55, kv. 23; Oleg S. Zabarilo, ulitsa Zodchikh, 62-a, kv. 100; Vasily A. Tkalich, ulitsa Saratovskaya, 6, kv. 2; Sergei E. Gedzun, ulitsa Malinovskogo, 25, kv. 176; Ljudmila G. Odintsova, ulitsa Gorkogo, 62, kv. 3, all of Kiev; Gavriil D. Agarkov, ulitsa Engelsa, 12, kv. 16, V.Salda; Vladislav V. Tetjukhin, ulitsa Spartakovskaya, 20, kv. 27; Nikolai A. Tulin, ploschad Nogina, 2, kv. 5, both of Moscow; Gennady G. Vedernikov, ulitsa Zhukova, 8, kv. 21, Chelyabinsk; Nikolai P. Pozdeev, ulitsa B.Khmelnitskogo, 25, kv. 109, Chelyabinsk; Valery D. Azbukin, ulitsa Stalevarov, 46-a, kv. 60, Chelyabinsk; Georgy N. Okorokov, ulitsa Valovaya, 42/44, kv. 22, Moscow, and Nikolai V. Letnikov, ulitsa 8 Marta, 55, kv. 2, Elektrostal Moskovskoi oblasti, all of U.S.S.R.

Continuation of Ser. No. 1,862, Jan. 8, 1979, abandoned. This application Dec. 30, 1983, Ser. No. 565,852

Int. Cl.[4] B23K *9/00*

U.S. Cl. 219—121 PM **6 Claims**



1. A plasma-arc torch for use with a work piece, said torch comprising:

an elongated water-cooled torch body having a nozzle portion;

a refractory metal hollow electrode having a central passage therein and positioned in said torch body in a radially spaced relationship thereto for forming a first annular gas passage between said electrode and said torch body;

an auxiliary electrode made from a metal similar to that of said hollow electrode, and positioned within the central passage of said hollow electrode in a radially spaced relationship thereto for forming a second annular gas passage between said auxiliary electrode and said hollow electrode, said second gas passage separate and distinct from said first gas passage, said auxiliary electrode terminating in an arcing tip that is positioned within and surrounded by said hollow electrode;

said hollow electrode and said auxiliary electrode being connected in an electric circuit for igniting a pilot arc therebetween when switching on the current, said pilot arc being ignited between the arcing tip of said auxiliary electrode and an interior portion of said hollow electrode that surrounds said arcing tip, said hollow electrode simultaneously igniting a main arc between said hollow electrode and the work piece due to the presence of a gas being ionized in said pilot arc, said pilot arc being ignited upstream of and being continuously in close proximity to said main arc;

said plasma-arc torch further comprising two elongated electrode holders, one for each of said refractory metal hollow electrode and said auxiliary electrode, each of said electrode holders including a fluid passage for circulating cooling fluid throughout the entire length of each holder, and passage means defined through the length of each holder, for circulating cooling fluid to said nozzle portion for cooling said electrodes, whereby to minimize electrode erosion; and

said arrangement further including means for igniting said main arc and said pilot arc while maintaining said pilot arc so that the current value across the pilot arc is at least 0.05 that across the main arc.

4,564,741
ARTICULATION MECHANISM OF AN ARC WELDING ROBOT

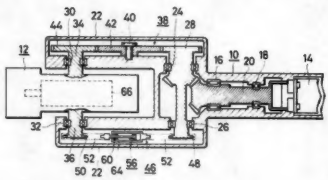
Hirotoshi Yasuoka, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1984, Ser. No. 574,217

Claims priority, application Japan, Jan. 26, 1983, 58-10881

Int. Cl.[4] B23K *9/12*

U.S. Cl. 219—125.1 **4 Claims**



1. An articulation mechanism of an arc welding robot comprising a drive arm containing a motor therein and provided with an articulation housing at its tip end, and a driven arm pivotally supported by said articulation housing provided at the tip end of said drive arm and driven by said motor, and a transmission gear mechanism provided in one inner side of said articulation housing for transmitting the driving force of said motor from an output shaft of said motor to an input shaft of said driven arm and a position-shift preventing mechanism provided in the other inner side of said articulation housing for preventing the position-shift of said output and input shafts, wherein said articulation housing includes forked arm portions, said driven arm being provided with first and second axes portions extending into said forked arm portions, said first and second axes portions being coupled to said transmission gear mechanism and said position-shift preventing mechanism, respectively.

4,564,742
SOURCE OF POWER FOR ARC WELDING

Rolf L. Karlsson, Laxå, Sweden, assignor to ESAB Aktiebolag, Sweden

Filed Nov. 19, 1984, Ser. No. 672,720

Claims priority, application Sweden, Nov. 28, 1983, 8306550

Int. Cl.[4] B23K *9/10*

U.S. Cl. 219—130.1 **9 Claims**

1. In a power source for arc welding aplications having rectifier means for providing a d.c. output from a.c. mains, smoothing capacitor means for shaping a d.c. output from said rectifier means and an inverter arrangement connected in parallel with said capacitor means for converting said shaped d.c. output into an a.c. voltage having a frequency substantially higher than that provided by said a.c. mains, the improvement comprising:

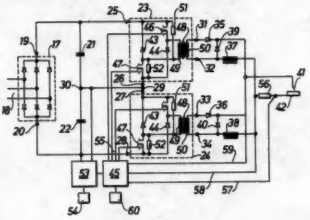
a plurality of individual inverter means forming said inverter arrangement, each of said plurality of individual inverter means having a pair of inputs, a pair of outputs, and including at least a pair of semiconductive elements, each of said pair of semiconductive elements being connected between one input and one output of said individual inverter means;

means for interconnecting selected inputs to each pair of said plurality of individual inverter means to connect each of said plurality of individual inverter means in said inverter arrangement in series;

control means for controlling the conductivity of a semiconductive element, said control means being connected to said at least said pair of semiconductive elements within each of said plurality of individual inverter means;

transformer means connected across each pair of outputs from each of said plurality of individual inverter means;

a plurality of capacitors forming said smoothing capacitor means, said plurality of capacitors being connected in series, each pair of serially connected capacitors within said plurality of capacitors being connected in parallel to each pair of serially connected individual inverter means



within said plurality of individual inverter means, and each of said plurality of capacitors being connected across said pair of inputs to one of said plurality of individual inverter means;

a plurality of pairs of resistor means, each one of said plurality of pairs of resistor means being connected in parallel with one of said plurality of capacitors and an associated one of said plurality of individual inverter means, each resistor means of each of said plurality of pairs of resistor means being connected to a differing one of said pair of inputs to said associated one of said plurality of individual inverter means and to a common one of said pair of outputs thereto; and

means for connecting each of said plurality of individual inverter means to a welding station.

4,564,743

FUSION WELDING OF ALUMINUM ALLOYS

Stuart S. Birley, and Philip E. Roper, both of Bracknell, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland

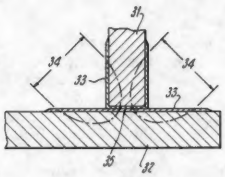
PCT No. PCT/GB83/00001, § 371 Date Aug. 23, 1983, § 102(e) Date Aug. 23, 1983, PCT Pub. No. WO83/02415, PCT Pub. Date Jul. 21, 1983

PCT Filed Jan. 7, 1983, Ser. No. 531,895

Claims priority, application United Kingdom, Jan. 20, 1982, 8201573

Int. Cl.⁴ B23K *9/235*

U.S. Cl. 219—137 R **10 Claims**



1. A method for fusion welding together two portions of a parent metal comprised by an alloy of aluminum, zinc and magnesium including the steps of surface abrading said portions in at least the region of their mutual interface and the intended weld zones, coating said portions by applying to each abraded surface a hot-sprayed coating comprised by a metal having a lower electrochemical potential than the parent metal, and abutting the two coated portions at the mutual interface and fusing them together by a fusion welding process, said fusion welding process being operative to destroy said coating in the fusion zone while leaving said coating intact at all the nonfused surfaces adjacent to the weld zones to provide a thermal barrier during the fusion welding process and subsequent galvanic protection against corrosion.

4,564,744

INTEGRATED INFRARED THERMOSTAT RESONATOR

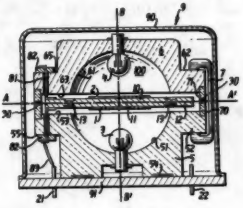
Jean P. Valentin, Pouilley-les-Vignes, France, assignor to L'Etat Francais represented by Delegation Generale, Paris, France

Filed May 2, 1984, Ser. No. 606,247

Claims priority, application France, May 3, 1983, 83 07307

Int. Cl.⁴ H05B *1/00*; H01L *41/08*

U.S. Cl. 219—210 **9 Claims**



1. A resonator having an integrated infrared thermostat, comprisng:

a sealed, vacuum tight casing having therein:

a piezoelectric crystal having an actively vibratable central section and linkage bridges to an outer peripheral ring;

first and second electrodes deposited on opposite surfaces of the central section of the crystal;

means for supporting the peripheral ring of the crystal;

infrared heating means and reflecting means for reflecting heat from said heating means onto the crystal;

at least one temperature sensor;

linkage conductors electrically connecting said first and second electrodes, the temperature sensor, and the infrared heating means, respectively, with electrical connection terminals which extend in a sealed manner through the casing from its interior to the exterior thereof:

wherein the reflecting means comprise reflectors including an electrically insulating material having a concave hemispherical dome in one surface thereof, said dome being coated with a layer of refecting metal, and said reflectors being located on opposite sides of the crystal with the concave metal coated domes facing the crystal;

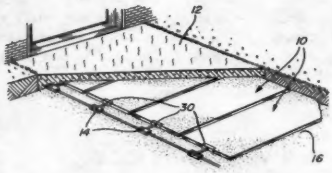
the infrared heating means comprising small, low voltage incandescent electric light bulbs located between each concave reflective dome and the crystal;

and the sensor is a thermocouple comprising two thin metal layers superimposed seriatim on one side of the central section of the crystal, at least one of said layers simultaneously comprising an excitation electrode for the crystal.

4,564,745
PRE-CAST HEATING PANEL

Maurice Deschenes, Ste.Thérèse d'en Haut, Canada, assignor to Geant Entrepeneur Electrique Ltee, Laval, Canada

Filed Feb. 24, 1984, Ser. No. 583,213
Int. Cl.[4] H05B 3/28
U.S. Cl. 219—213 12 Claims

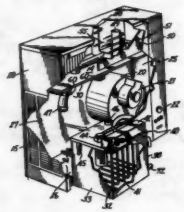


1. A heating panel comprising a fiber-reinforced mortar prepared from a mixture of a cementing material, a finely divided mineral aggregate and water and incorporating a fibrous non-electrically conductive reinforcement material homogeneously dispersed therein, and a flexible electric heating element embedded in said fiber-reinforced mortar.

4,564,746
STEAM HUMIDIFIER CABINET CONSTRUCTION

Bernard W. Morton, and Bruce K. Olseth, both of Minnetonka, Minn., assignors to DRI STEEM Humidifier Company, Hopkins, Minn.

Filed Jul. 11, 1984, Ser. No. 629,587
Int. Cl.[4] F24F 6/18
U.S. Cl. 219—276 5 Claims



1. A cabinet mounted steam humidifier comprising an outer housing forming an enclosed cabinet of size to be mounted on a wall of a room and having first and second end walls and a side wall facing into such room comprising:

first wall means for dividing said cabinet into an upper and a lower chamber;

an air inlet in the first end of said housing leading to said lower chamber and open to a room;

an air outlet defined in upper chamber open to a room and defined in the side wall of the housing;

a fan mounted in said lower chamber and having an inlet drawing air from the air inlet, and a fan discharge opening to said upper chamber at a position at the second end of the housing;

second walls forming an enclosed evaporative chamber in which steam is formed including a heater unit forming steam from water, said evaporative chamber being mounted in said lower chamber;

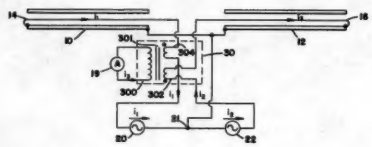
a divider wall in the upper chamber alongside the fan discharge opening and spaced from the first side wall and located at the second end of the housing to form a duct passage in the upper chamber extending toward the first end of the housing; and

steam dispersion tubes mounted in said upper chamber within the duct formed by the divider wall and connected to said evaporative chamber for dispersing water vapor adjacent the discharge opening from said fan in an opposite direction from normal airflow from the fan whereby air from the fan flows in an airflow path past said steam dispersion tubes in the duct, toward the second end and causes the water vapor to change direction of flow and pass from the fan discharge opening to the air outlet of said housing, and the evaporative chamber and fan being isolated from the airflow path by said first wall means.

4,564,747
METHODS AND APPARATUS FOR DETECTING ABNORMALITIES IN PROXIMITY EFFECT HEAT-TRACING CIRCUITS

Paul F. Offermann, Redwood City, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 30, 1983, Ser. No. 537,995
Int. Cl.[4] H05B 1/02; H02H 3/16
U.S. Cl. 219—482 16 Claims



1. Apparatus for detecting current flow abnormalities in either of a pair of proximity-effect pipeline heat-tracing circuits for heating at least two serially connected pipeline sections, comprising:

a first source of alternating current for heating one of said pipeline sections;

a second source of alternating current for heating the other of said pipeline sections, said second source having the same voltage phase as said first source and having one output terminal connected to one output terminal of said first source to form a current node;

a first proximity effect heat-tracing segment in heat-exchange relation with one of said pipeline sections, said first segment including a first elongated insulated conductor extending through and surrounded by a first heat tube, said first heat tube having one end connected to said node and the other end connected to one end of said first insulated conductor;

a second proximity effect heat-tracing segment in heat-exchange relation with the other of said pipe sections, said second segment including a second elongated insulated conductor extending through and surrounded by a second heat tube, said second heat tube having one end connected to said node and the other end connected to one end of said second insulated conductor;

a single current transformer having (1) a first conductive element connected between said first alternating current source and the other end of said first insulated conductor extending through said first heat-tracing tube segment and (2) a second conductive element with opposite polarity to said first conductive element connected between said second alternating current source and the other end of said second insulated conductor extending through said second heat-tracing tube segment, and (3) a third conductive element inductively coupled to both said first and said second conductive elements; and

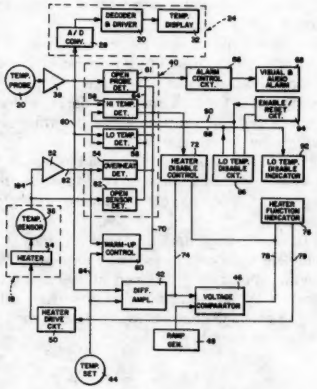
means for detecting current flow induced in said third conductive element by any difference between the currents flowing through said first conductive element and said second conductive element whereby abnormal current flow and unequal generation of heat in one of said heat-tracing segments relative to the other of said heat-tracing segments is detected by said current flow.

4,564,748

VARIABLE TEMPERATURE HEATING CONTROL SYSTEM FOR INHALATION THERAPY APPARATUS

John Gupton, Vernon Hills, Ill., assignor to Respiratory Care, Inc., Arlington Heights, Ill.

Filed Oct. 29, 1982, Ser. No. 437,562
Int. Cl.[4] H05B *1/02*
U.S. Cl. 219—497 17 Claims



1. A heating control system comprising, in combination:

heater means for heating a flowing gas, said heater means including a heater block;

temperature sensor means, downstream of said heater means, for sensing the temperature of said flowing gas and providing a sensor signal related thereto;

temperature probe means for sensing the temperature of said heater block and providing a probe signal related thereto;

set means for selecting a desired temperature for said flowing gas and providing a set signal related thereto;

control means, responsive and interconnected to said temperature sensor means, said temperature probe means, and said set means, for controlling the operation of said heater means; and

display means for displaying the temperature of said flowing gas as sensed by said temperature sensor means downstream of said heater means;

said control means defining a high temperature limit and a low temperature limit so as to establish a permissible temperature range, said control means disabling said heater means whenever said sensor signal indicates that the temperature of said flowing gas is outside said permissible temperature range;

said control means defining a block temperature limit and disabling said heater means whenever said probe signal indicates that the temperature of said heater block exceeds said block temperature limit so as to substantially avoid a runaway condition;

said control means monitoring said sensor signal and said set signal and enabling said heater means in a predetermined manner whenever said sensor signal indicates that the temperature of said flowing gas is below said desired temperature;

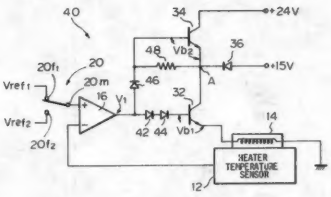
said control means including warm-up means for intermittently enabling and disabling said heater means to substantially avoid overshooting said desired temperature for said flowing gas, said warm-up means being interconnected with and responsive to said set means and said temperature probe means, said warm-up means including a predetermined warm-up limit based upon said desired temperature of said set means, said warm-up means becoming operative when said probe signal indicates that the temperature of said heater block exceeds said warm-up limit.

4,564,749

HEATER DRIVE CIRCUIT FOR CONTROLLING INK TEMPERATURE IN INK JET PRINTER

Kazumi Ishima, Kashiwa, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 16, 1984, Ser. No. 600,718
Claims priority, application Japan, Apr. 19, 1983, 58-68830
Int. Cl.[4] H05B *1/02*
U.S. Cl. 219—497 7 Claims



1. A heater drive circuit for controlling a temperature of a heater, comprising:

a sensor for sensing a temperature of the heater;

an error amplifier having a first input which is supplied with an output of said sensor, and a second input which is selectively supplied with a first reference voltage which supplies the heater with power necessary for a startup of the heater and a second reference voltage which supplies the heater with power necessary for a stationary operation of the heater to maintain the heater at a predetermined temperature;

a first output transistor having a base supplied with an output voltage of the error amplifier and switching a supply of a first power source voltage to the heater;

a second output transistor having a base supplied with an output voltage of the error amplifier and switching a supply of a second power source to the heater;

at least one diode connected between an output of the error amplifier and the first output transistor for shifting a level of an output voltage of the error amplifier; and

at least one diode connected between the output of the error amplifier and the second output transistor for shifting a level of an output voltage of the error amplifier;

each of the diodes being selected such that the level of the voltage applied to the heater is varied linearly without a sharp change.

4,564,750

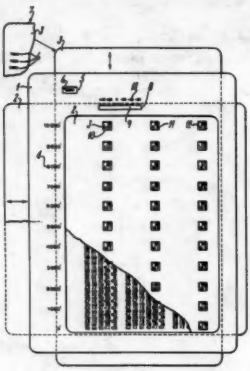
DEVICE FOR COMBINATION OF DATA

Pal B. Olsen, Walter Roffs vei 4, N-4300 Sandnes, Norway

Filed Jun. 28, 1984, Ser. No. 625,313
Claims priority, application Norway, Jul. 7, 1983, 832476
Int. Cl.[4] G06C *3/00*
U.S. Cl. 235—89 R 4 Claims

1. A device for combining data, comprising a frame and at least an upper and a lower plate displaceably arranged in said frame, said plates being located in superimposed parallel planes and being freely displaceable in mutually perpendicular directions, said lower plate being provided with a plurality of data arrranged in rows and columns respectively parallel to and normal to the displacement direction of said plate, said upper plate being provided with a plurality of windows arranged in similar rows and columns, for displaying data on the lower

plate in dependence on the relative position of the plates, said frame being provided with a first and a second window for



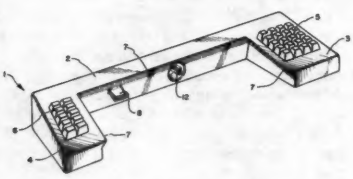
positioning each of said plates in relation to said frame in dependence on given initial data.

4,564,751

WRAP-AROUND AUXILIARY KEYBOARD

Lynn D. Alley, Riverton; Stephen W. Alley, Bountiful; William K. Sadlier, and Richard A. Burton, both of Salt Lake City, all of Utah, assignors to The Legacy Group Research and Development Limited Partnership, Salt Lake City, Utah

Filed Mar. 26, 1985, Ser. No. 716,200
Int. Cl.[4] G06C *7/02*
U.S. Cl. 235—146 **21 Claims**



1. A wrap-around auxiliary keyboard comprising:
(a) housing;
(b) keys positioned in said housing; and
(c) circuitry means in said housing for input of character set data from said keys and for output of said character set data from said auxiliary keyboard;
wherein said housing comprises a base and an extension extending from said base; and wherein said base and said extension are shaped and are positioned with respect to each other so as to be able to wrap-around a primary keyboard.

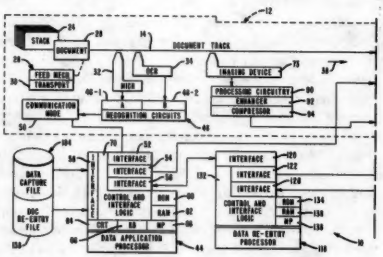
4,564,752

CONCURRENT, IMAGE-BASED, REJECT-RE-ENTRY SYSTEM AND METHOD

Daniel A. Lepic, and Robert B. Nally, both of Waterloo, Canada, assignors to NCR Canada Ltd - NCR Canada Ltee, Mississauga, Canada

Filed Dec. 23, 1982, Ser. No. 452,663
Int. Cl.[4] G06K *5/00*
U.S. Cl. 235—437 **7 Claims**

1. A document re-entry system comprising:
a transport system having a track along which documents are fed substantially in a feeding direction by an associated feed mechanism;
reading means positioned at said track in operative relationship with said documents as they are fed along said track so as to read therefrom data associated with each said document; said reading means including means to determine whether the data read from each said document is complete or incomplete with respect to predetermined criteria and to produce corresponding complete and incomplete signals, respectively;
diverting means positioned along said track for diverting into a reject area those of said documents having a said incomplete signal associated therewith;
processing means for processing said data read by said reading means and for controlling said diverting means;
said processing means including:
storing means for storing said data read from said documents and also for enabling said data read to be distinguished as complete or incomplete with regard to the associated documents;
means for completing data for those documents having an incomplete signal associated therewith, and comprising:
an imaging apparatus positioned along said track downstream along said feeding direction from said reading means to produce digitized image data of each said document passing thereby;



data development means including a memory for storing said digitized image data, a display and a keyboard; and
interface means for interfacing said processing means with said date development means to enable said data for a document having an incomplete signal associated therewith to be viewed on said display along with an image for said document derived from the associated digitized image data from said memory to enable an operator to key in additional data on said keyboard to thereby complete the data forming completed data for said last-named document;
said completed data being transferred from said data development means to said storing means via said interface means and said processing means upon actuation of a transfer key on said keyboard while the associated said last-named document is in said reject area;
said reading means including a reader for reading magnetic ink character recognition or MICR data; and
said storing means including a first memory for storing said data read by said reading means for all said documents fed along said track and also including a second memory for storing said completed data for those said documents having a said incomplete signal initially associated therewith.

4,564,753

RADIATION DETECTOR

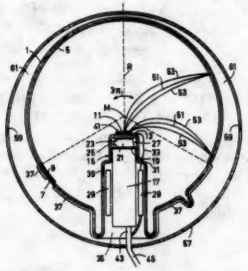
Gerardus Van Aller, and Walter H. Kühl, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 17, 1983, Ser. No. 505,538

Claims priority, application Netherlands, Jun. 23, 1982, 8202546

Int. Cl.[4] H01J *31/50*

U.S. Cl. 250—213 VT 10 Claims



1. A radiation detector, comprising:

an envelope;

an entrance screen for converting radiation outside the envelope into electrons inside the envelope, the entrance screen comprising a photocathode which extends within the envelope over substantially a solid angle of at least 180°, and

an electron-detecting exit screen for collecting the electrons from the entrance screen, the exit screen being proportioned and arranged such that the exit screen collects photoelectrons from the entire photocathode.

4,564,754

METHOD AND APPARATUS FOR OPTICALLY MEASURING A CURRENT

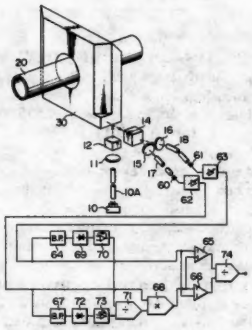
Tadashi Sato, Mito; Genji Takahashi, Hitachi, and Yoshiaki Inui, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 472,834

Claims priority, application Japan, Mar. 8, 1982, 57-35226; Jun. 28, 1982, 57-110019; Aug. 23, 1982, 57-144724

Int. Cl.[4] G02F *1/01;* H01J *40/14*

U.S. Cl. 250—225 16 Claims



1. An optical current measuring apparatus comprising:

a conductor for conducting a current under measurement;

a Faraday effect glass disposed to link perpendicularly to said conductor and having at least two total reflection areas at corners thereof;

a light source for directing a light to a light input section of said Faraday effect glass;

a polarizer for linearly polarizing the light from said light source and directing the linearly polarized light to said Faraday effect glass;

said linearly polarized light being reflected at said total reflection areas of said Faraday effect glass such that said linearly polarized light circulates around said conductor as linearly polarized light and emits from a light output section of said Faraday glass as linearly polarized light, whereby said current is measured based on a Faraday rotation angle of the light by a magnetic field created by said current flowing in said conductor;

said total reflection areas of said Faraday effect glass being configured for enabling said linearly polarized light reflected thereat to circulate and be emitted from said Faraday effect glass as linearly polarized light;

said Faraday effect glass being planar and having an opening through which said conductor extends;

an analyzer disposed to face said light output section of said Faraday effect glass for splitting the light from said light output section into two light beams;

a pair of condenser lenses disposed to condense said two light beams from said analyzer;

a pair of optical fibers disposed to face said condenser lenses;

a pair of light detectors arranged to receive lights transmitted through said optical fibers; and

an arithmetic unit for calculating said Faraday rotation angle based on outputs from said light detectors.

4,564,755

TRANSMISSION AND RECEPTION DEVICE FOR A FIBER-OPTICAL SENSOR SYSTEM

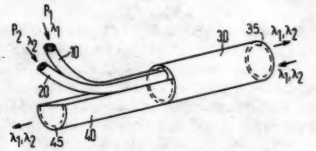
Gerhard Winzer, Putzbrunn, and Hans Mahlein, Unterhaching, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 30, 1983, Ser. No. 509,993

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1982, 3230570

Int. Cl.[4] G01D *5/34*

U.S. Cl. 250—227 19 Claims



1. A transmission and reception device for a fiber-optic sensor system functioning with two wavelengths, comprising a transmitter emitting a first wavelength and a transmitter emitting a second wavelength, whereby each wavelength is supplied to a transmitter-side end of a fiber path of the sensor system for in-coupling, and comprising an evaluation means for measuring the power of a radiation having the first wavelength supplied from the transmitter-side end of the fiber path to the evaluation means and for measuring the power of a radiation having the second wavelength supplied to the evaluation means from the same end of the fiber path, characterized in that said transmission and reception device includes a fiber-optical light waveguide brancher which includes one gate at the side of said fiber path to which said fiber path is coupled and which includes one respective gate per transmitter at the side facing away from said fiber path to which an allocated transmitter is coupled, and also includes a gate allocated to said evaluation means to which said evaluation means is coupled,

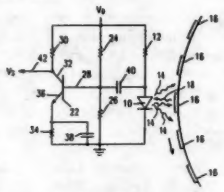
the fiber-optical brancher further comprising two butt-coupled fibers of a first thickness of which one is laterally ground; and by one or more relatively thinner fibers applied to the laterally ground face of the one thicker fiber, said thinner fibers being likewise butt-coupled to the unground thicker fiber, whereby a respective gate of the brancher is allocated to each of said fibers.

4,564,756

PROXIMITY SENSOR WITH A LIGHT-EMITTING DIODE WHICH SIMULTANEOUSLY EMITS AND DETECTS LIGHT

Mark Johnson, Mt. Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 6, 1984, Ser. No. 568,667
Int. Cl.⁴ G01D *5/34*
U.S. Cl. 250—231 SE **9 Claims**



1. A self-detecting light-emitting diode proximity sensor, comprising:

a light emitting diode;

means forward biasing said diode at a substantially constant forward bias thereby illuminating a detection region adjacent said light emitting diode with light emitted from said diode, some of the light emitted by said diode reflecting back and illuminating said forward biased diode when an object to be sensed is within said detection region; and

signal amplifying means connected to said light emitting diode for sensing variations in the impedance of said forward biased diode caused by reflected light illuminating said diode,

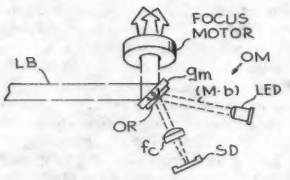
whereby the presence of an object within said detection region is thereby sensed.

4,564,757

MIRROR POSITION SENSOR FOR IMPROVED TRACK SELECTION IN OPTICAL DATA DISK SYSTEM

Edward V. LaBudde, Newbury Park; Jeffrey E. Niven, Camarillo; Der-Chang Hsieh, Thousand Oaks; Roger C. Parker, Camarillo, and Robert Jeffery Johnson, Thousand Oaks, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sep. 30, 1982, Ser. No. 430,284
Int. Cl.⁴ H01J *5/02*
U.S. Cl. 250—239 **19 Claims**



1. An improved apparatus for monitoring the pivoting of reflector means, this apparatus comprising:

magnetic galvanometer motor means adapted to controllably pivot the reflector means;

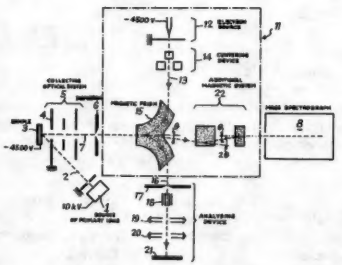
optical monitor means including source means, detector means and intermediate optical means, the source means being adapted to project a beam directed at a prescribed portion of the reflector means, the associated detector means being arranged and adapted to receive this beam and to responsively generate a "pivot signal" whose variance corresponds to the degree of pivoting; and unitary housing means adapted to mount and package the reflector means, the motor means and the monitor means being depolyed in fixed spatial relation, the monitor means being embedded in said housing means whereby to be isolated from optical interference and to be adapted for selective insertion, removal and re-insertion of said source means, detector means and optical means.

4,564,758

PROCESS AND DEVICE FOR THE IONIC ANALYSIS OF AN INSULATING SAMPLE

Georges Slodzian; Marcel Chaintreau, and Roger Dennebouy, all of Orsay, France, assignors to Cameca, Courbevoie, France

Filed Feb. 1, 1984, Ser. No. 575,828
Int. Cl.⁴ H01J *37/252*
U.S. Cl. 250—309 **5 Claims**



1. A process for ionic analysis of an insulating sample brought to a given negative potential, of a type in which a target on the surface of the sample to be analyzed is bombarded by means of a primary ion beam and negative ions emitted by the bombarded target are used for producing an ion image of the sample, wherein an electron beam, whose normal speed component cancels out just at the level of the surface of the target, is directed perpendicularly to the target, said electron beam being, after emission, deflected by a magnetic prism so as to brought into coincidence with the optical axis of the negative ion beam emitted by the target.

4,564,759

CORONA DISCHARGE DEVICE

Andreas Tietje, Tariffville, Conn., assignor to Ensign-Bickford Industries, Inc., Simsbury, Conn.

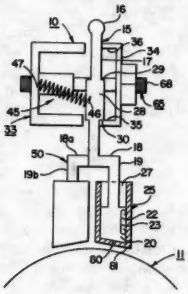
Filed Sep. 26, 1983, Ser. No. 535,372
Int. Cl.⁴ H01T *19/04*
U.S. Cl. 250—324 **11 Claims**

1. A corona discharge device comprising first electrode means and second electrode means mounted in spaced electrically insulated relationship with respect to each other,

said first electrode means including a plurality of electrically conductive members, and means for independently supporting each conductive member for movement toward and away from said second electrode means, each such conductive member having a shank portion, an intermediate portion and an end portion, said end portion being laterally offset from said shank portion and connected thereto by said intermediate portion,

said plurality of conductive members being supported with side edges of the shank portion of each adjacent conduc-

tive member in abutting relationship, with the intermediate portion of each adjacent conductive member extend-



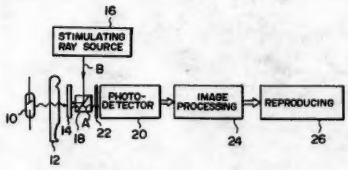
ing in opposite directions and with the offset end portion of one conductive member spaced apart from the offset end portion of the next adjacent conductive member.

4,564,760

RADIATION IMAGE READ-OUT APPARATUS

Masaru Noguchi; Kazuo Horikawa, and Akihiro Ohga, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 19, 1984, Ser. No. 672,683
Claims priority, application Japan, Nov. 22, 1983, 58-218678
Int. Cl.⁴ G03G 5/16
U.S. Cl. 250—327.2 **8 Claims**



1. A radiation image read-out apparatus provided with a stimulating ray optical system for exposing a stimulable phosphor carrying a radiation image stored therein to stimulating rays, a photodetector for detecting light emitted by the stimulable phosphor upon exposure to said stimulating rays, and a light guide member for guiding the emitted light to said photodetector, said light guide member having one end face positioned close to the stimulable phosphor and the other end face optically connected to said photodetector, wherein the improvement comprises:

(i) positioning a dichroic optical plane, which selectively reflects either said stimulating rays or said light emitted by the stimulable phosphor and selectively passes the other, in an optical path of said light guide member, and

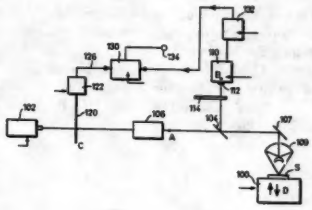
(ii) positioning said stimulating ray optical system so that said stimulating rays directly impinge upon said dichroic optical plane and come out of said one end face of said light guide member positioned close to the stimulable phosphor by being reflected by said dichroic optical plane or by passing therethrough, thereby stimulating the stimulable phosphor.

4,564,761

METHOD AND APPARATUS FOR THE ENHANCED DETECTION OF A COMPONENT OF A MATERIAL

Robert A. Buckwald, Ramat Yishai; Dario Cabib, Migdal Haemek, and Kurt Weiser, Haifa, all of Israel, assignors to C.I. Ltd., Ramat Yishai, Israel

Filed Feb. 24, 1983, Ser. No. 469,159
Claims priority, application Israel, Mar. 5, 1982, 65176
Int. Cl.⁴ G01T 21/71
U.S. Cl. 250—341 **24 Claims**



1. A method for the enhanced detection of a component in the base material of a sample, characterized by the steps of:

exposing a restricted region of interest in the sample to an intense source of photons to heat said region of the sample sufficiently to cause it to emit infrared radiation therefrom by subjecting the said region to electromagnetic radiation having a wavelength selected so as to be absorbed by the component to an appreciably larger extent than by the base material;

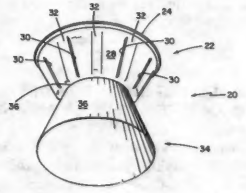
and detecting the infrared radiation emitted by said region of the sample as a result of the heating of said component therein produced by said exposure.

4,564,762

SMOKE DETECTOR

Charles F. Doherty, Quincy, and Robert E. Johnson, Pembroke, both of Mass., assignors to Pyrotector, Inc., Hingham, Mass.

Filed May 16, 1984, Ser. No. 610,760
Int. Cl.⁴ G01T 1/185
U.S. Cl. 250—381 **8 Claims**



1. An ionization detector unit for use in a smoke detector comprising a housing wall enclosing an ionization chamber, said wall having openings for passage of air through said chamber, the frontal surface of said wall that is exposed to an oncoming air flow from a given direction being inclined relative to an intersecting second surface exposed to said flow,

said frontal surface being shaped and positioned to deflect said air flow generally toward said second surface, and said second surface being shaped and positioned to deflect said air flow generally toward said frontal surface, said frontal surface and said second surface conforming substantially to portions of the surface of axially aligned, intersecting, opposed right cones, the shape and position of said surfaces cooperatively arranged to cause said deflected air flows to converge and form a region of air in the vicinity of the intersection of said surfaces that is at higher pressure and slower velocity than said oncoming

air flow, openings in said frontal surface of said housing are sized and positioned for entry of air from said vicinity in a relatively slow, laminar air flow through said chamber said frontal surface and said second surface comprising means for maintaining an effective ion current within said chamber despite the velocity of the oncoming air.

4,564,763

PROCESS AND APPARATUS FOR VARYING THE DEFLECTION OF THE PATH OF A CHARGED PARTICLE BEAM

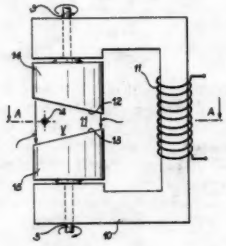
Michel Bruel, Veurey, and Jean-Francois Michaud, St. Pierre de Seucy, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 26, 1983, Ser. No. 517,394

Claims priority, application France, Aug. 17, 1982, 82 14204

Int. Cl.[4] G21K *1/08*; H01J *3/00*

U.S. Cl. 250—396 ML **3 Claims**



1. A device for deflecting a charged particle beam comprising:

a fixed magnetic circuit means;

two pole pieces having inclined faces positioned opposite each other which are coupled to said fixed magnetic circuit means which are separated from each other by way of an air gap;

rotating means coupled to said pole pieces for integrally rotating said pole pieces about their axes;

constant current means coupled to said fixed magnetic circuit means, for providing a constant current through a coil having a plurality of turns;

wherein the deflection of a charged beam passing through said air gap is varied in time.

4,564,764

WAFER HAVING CHIPS FOR DETERMINING THE POSITION OF THE WAFER BY MEANS OF ELECTRON BEAMS

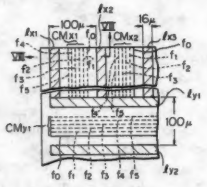
Hiroshi Yasuda, Yokohama; Kenichi Kawashima, Sagamihara; Takayuki Miyazaki, Nagaokakyo, and Koichi Kobayashi, Yokohama, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 30, 1983, Ser. No. 537,624

Claims priority, application Japan, Sep. 30, 1982, 57-172170

Int. Cl.[4] G01N *23/00*

U.S. Cl. 250—491.1 **8 Claims**



1. A wafer having position determining chips for determining the position of said wafer by means of electron beams, at least one of said position-determining chips comprising:

a plurality of first-direction line groups formed on one side portion of said at least one position-determining chip and extending in parallel to each other;

a plurality of second-direction line groups formed on the other region of said at least one position-determining chips and extending in the direction orthogonal to the direction of said first-direction line groups, said second-direction line groups extending in parallel to each other;

each of said first-direction line groups comprising one first-direction main mark and one first-direction code mark expressing the position of said one first-direction main mark, wherein said first-direction code mark is different for each of said first-direction line groups;

each of said second-direction line groups comprising one second-direction main mark and one second-direction code mark expressing the position of said one second-direction main mark, wherein said second-direction code mark is different for each of said second-direction line groups; whereby, by scanning one of said first-direction line groups and one of said second-direction line groups by means of an electron beam, the position of said wafer is determined.

4,564,765

OPTOELECTRONIC METHOD AND APPARATUS FOR MEASURING THE BENDING ANGLE OF MATERIALS

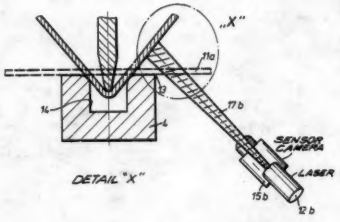
Michael Blaich, Stuttgart, Fed. Rep. of Germany, assignor to Karl Mengele & Söhne GmbH & Co., Günzburg, Fed. Rep. of Germany

Filed Apr. 29, 1983, Ser. No. 489,852

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1982, 3216053

Int. Cl.[4] G01H *21/86*

U.S. Cl. 250—561 **4 Claims**

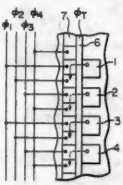


1. Optoelectronic measuring method for measuring the angular displacement of a surface on a workpiece about a bending line extending along the surface of the workpiece, such as a sheet metal plate, from a starting position A on the surface of the workpiece before angular displacement to a displaced position B on the surface of the workpiece after angular displacement using a light beam from a light source, such as a laser, comprising the steps of directing the light beam from the light source at the position A at an acute angle relative to the surface of the workpiece and relative to the bending line and forming a light spot at the starting position A, continuously measuring the angle of reflection formed by the light beam from the light spot on the surface of the workpiece using a photo detector, such as a diode-line camera and positioning the photo detector approximately perpendicularly to the bending line during the angular displacement of the workpiece surface, and determining when the displaced position of the workpiece surface has been reached when the measured angle determined in the photo detector equals an index angle corresponding to the displaced position B.

4,564,766
METHOD FOR DRIVING SOLID STATE IMAGE PICKUP DEVICE

Takao Kuroda, Osaka, and Kenju Horii, Shiga, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 370,049, Apr. 20, 1982. This application Feb. 14, 1985, Ser. No. 701,648
Int. Cl.[4] H01L *27/14*
U.S. Cl. 250—578 **4 Claims**



1. A method for driving a solid state image pick-up device having photoelectric conversion elements arranged in a row direction, comprising the steps of:

reading out, for discharging, signal charges stored in a first group of alternate rows of photoelectric conversion elements during a first field interval;

reading out, for detection, signal charges stored in a second group of the remaining alternate rows of photoelectric conversion elements during said first field interval;

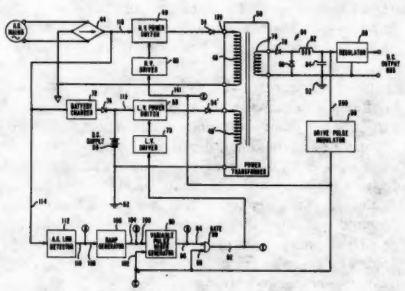
reading out, for discharging, signal charges stored in said second group of photoelectric conversion elements during a subsequent second field interval; and

reading out, for detection, signal charges stored in said first group of photoelectric conversion elements during said second field interval.

4,564,767
UNINTERRUPTIBLE SWITCHING POWER SUPPLY SYSTEM

Arthur Charych, Stony Brook, N.Y., assignor to TII Industries, Inc., Copiague, N.Y.

Filed Nov. 7, 1983, Ser. No. 548,944
Int. Cl.[4] H02J *9/06*
U.S. Cl. 307—66 **20 Claims**



19. A power supply system for providing uninterruptible DC output power comprising, in combination:

(a) a power transformer having first and second primary windings, one end of said first primary winding being coupled to a source of AC power, one end of said second primary winding being coupled to a source of DC power isolated from said source of AC power, the other ends of said first and second primary windings being coupled to different reference grounds;

(b) first and second switching means, said second switching means being coupled between said DC power source and said second primary winding, wherein said first and second switching means including:

(i) a first and second power transistor disposed in a DC current path to said first and second primary power windings, respectively,

(ii) first and second driver means having input and output terminals, said driver means output terminals being coupled to the base electrodes of said first and second power transistors, respectively, each said driver means being capable of driving said respective power transistors between a normally open non-conducting state between their respective emitter and collector electrodes to a closed conducting state therebetween;

(c) input rectifying means connected in series with said first switching means between said AC power source and said first primary transformer winding, said rectifying means rectifying said AC power resulting in a DC voltage being coupled to said first switching means;

(d) at least one secondary output winding disposed upon said power transformer;

(e) at least one output rectifying means for providing a DC output voltage, said output rectifying means being connected to one of said secondary windings; and

(f) transition means coupled to said DC output voltage, said resulting DC voltage and said first and second swtiching means, for sensing the amplitude of said DC output voltage and said resulting DC voltage and controlling the duty cycle of said second switching means by increasing the duty cycle of said second switching means to supply additional power when said resulting DC voltage decreases, thereby providing a virtually transient-free DC output voltage, wherein said transition means including:

(i) drive pulse modulator means having an input and an output terminal, for providing a rectangularly-shaped switching voltage at said output terminal with a frequency directly proportional to the amplitude of said DC output voltage within a preselected range, said modulator means input terminal being coupled to said DC output voltage, said modulator means output terminal being coupled to said first driver means input terminal,

(ii) variable pulse width generator means, having a pair of input terminals and an output terminal, for providing on said generator means output terminal a variable pulse width switching voltage, one of said generator means input terminals having an internally generated sawtooth voltage coupled thereon, the other of said generator means input terminals being coupled to said driving pulse modulator means output terminals,

(iii) gating means having an output terminal and a pair of input terminals for providing a proportional variable duty cycle switching output voltage on said gating means output terminal, said gating means output terminal being coupled to said second driver means, said first gating means input terminal being coupled to said variable pulse width generator means output terminal, and

(iv) ramp generator means, having an input and an output terminal, for generating a ramp output voltage on said ramp generator means output terminal, said ramp generator means output terminal being coupled to said variable pulse generator means other input terminal, said ramp generator providing said ramp output voltage on said ramp generator means output terminal when receiving a voltage change appearing on its input terminal.

4,564,768
CONTACTLESS RELAY

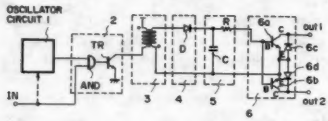
Hidetsugu Komiya, and Michiya Inoue, both of Hino, Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

Filed Apr. 27, 1983, Ser. No. 489,089

Claims priority, application Japan, Apr. 27, 1982, 57-61716[U]

Int. Cl.⁴ H03K *17/56*

U.S. Cl. 307—140 **2 Claims**



1. A contactless relay comprising:

oscillating means for generating an A.C. signal;

a transformer having primary and secondary windings for delivering the A.C. signal from said oscillating means, the A.C. signal being applied to the primary windings and delivered from the secondary windings;

AND gate means having a first input operatively connected to receive said A.C. signal, a second input operatively connected to receive input and an output, for providing said A.C. signal in accordance with said first and second inputs;

a transistor having a base operatively connected to said output of said AND gate means, a collector operatively connected to said primary of said transformer, and an emitter for applying said A.C. signal to the primary windings of said transformer;

a diode having an anode operatively connected to a first end of said secondary of said transformer and a cathode, for rectifying the A.C. signal obtained from the secondary windings of said transformer, said diode producing a rectified output;

a smoothing circuit including a capacitor operatively connected to said cathode and to a second end of said secondary, and a resistor having a first end operatively connected to said cathode and a second end, for smoothing the rectified output produced by said diode and for delivering a D.C. output signal; and

bipolar transistor switching means driven by the D.C. signal from said smoothing circuit and including --

a pair of bipolar transistors having interconnected emitters, interconnected bases operatively connected to said second end of said resistor and respective collectors,

a pair of diodes respectively and backwardly connected across a corresponding emitter and collector of one of said pair of bipolar transistors.

4,564,769
SATURATION CONTROL OF A SWITCHING TRANSISTOR

Anna Melamed, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

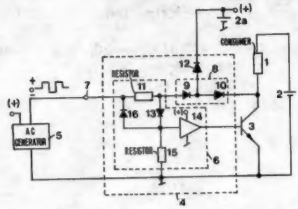
Filed Sep. 12, 1983, Ser. No. 531,340

Claims priority, application Denmark, Oct. 7, 1982, 3237141

Int. Cl.⁴ H03K *17/64*

U.S. Cl. 307—300 **2 Claims**

1. A transistor circuit comprising a switching transistor having a base, collector and emitter, a load and a DC power supply in series with the collector-emitter path of said transistor, a control input terminal, a base circuit diode connected between said input and said base poled to conduct current in the same direction as the base-emitter junction of said transistor, a current amplifier connected between said base circuit diode and said base, a saturation control circuit connected between said input and said collector including first and second diodes in series poled to conduct current towards said collector, said diodes interacting so that upon a switch-on voltage being applied to said input the base-emitter voltage is higher than the collector-emitter voltage an amount approximating the difference between the voltage drop across said first and



second diodes and the voltage drop across said base circuit diode.

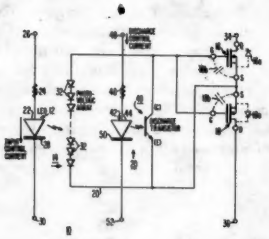
4,564,770
SOLID STATE RELAY WITH FAST TURNOFF

Jeffrey D. Sherman, Billerica, and Stephen E. Courcy, Westford, both of Mass., assignors to RCA Corporation, Princeton, N.J.

Filed Mar. 29, 1983, Ser. No. 479,988

Int. Cl.⁴ H03K *3/42*; G02B *27/00*

U.S. Cl. 307—311 **5 Claims**



1. In a solid state relay comprising in combination:

a pair of input terminals;

a light-emitting diode connected between said input terminals for generating radiation in response to current applied to said input terminals;

an array of photodiodes series connected between a pair of array electrodes and optically coupled to said light-emitting diode for developing a control voltage across said array electrodes in response to radiation from said light-emitting diode;

a field-effect-transistor (FET) including a pair of electrodes defining a principal conduction path, and a control electrode, one of said array electrodes coupled to said control electrode and the other of said array electrodes coupled to one of said FET pair of electrodes, whereby the impedance between said FET pair of electrodes has a first value in the absence of, and another greatly different second value in the presence of, said control voltage between said control electrode and said one of said FET pair of electrodes;

the improvement comprising:

an optical bipolar transistor coupled between said control electrode and said one of said FET pair of electrodes for providing a relatively low impedance therebetween when said FET impedance is at said first value and for providing a relatively high impedance when said FET impedance is at said second value; and

a second light emitting diode optically coupled to said bipolar transistor and responsive to a signal for controlling the state of conduction of said bipolar transistor.

4,564,771

INTEGRATED DARLINGTON TRANSISTOR COMBINATION INCLUDING AUXILIARY TRANSISTOR AND ZENER DIODE

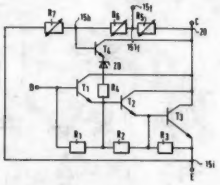
Peter Flohrs, Reutlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,154

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1982, 3226850

Int. Cl.[4] H03K *17/60*

U.S. Cl. 307—315 12 Claims



1. Darlington transistor combination comprising an input transistor (T_1), a driver transistor (T_2) and a power transistor (T_3), the respective collectors of said input and driver transistor being connected to the collector of said power transistor, the emitter of said input transistor being connected to the base of said driver transistor and the emitter of said driver transistor being connected to the base of said power transistor, the base of said input transistor being the control electrode of said transistor combination for connection of an input signal, and the collector and emitter of said power transistor providing the controlled path connection of said transistor combination, the base of said driver transistor (T_2) being connected to a series circuit containing a first resistance (R_4) connected to said driver transistor base and a Zener diode (ZD) having its anode connected to said first resistance (R_4), a second resistance (R_2) being connected in parallel to the base-emitter path of said driver transistor, said transistors, Zener diode, and first and second resistances being constituted as portions of an integrated circuit monolithically integrated by planar integrated circuit technology on a common semiconductor substrate which provides the collector zones of said transistors, the cathode of said Zener diode (ZD) being in circuit with the tap (15*h*) of a voltage divider consisting of a third resistance (R_5,R_6) and a fourth resistance (R_7), said voltage divider having its ends respectively connected to the collector and emitter of said power transistor (T_3), said transistor combination incorporating the improvement which comprises:

an auxiliary transistor (T_4) monolithically integrated on said common substrate and having its collector zone provided by said common substrate, coupled for conduction of the series circuit between said base of said driver transistor (T_2) and the cathode of said Zener diode (ZD) under control of the potential of said tap (15*h*) of said voltage divider and having its collector connected to the collector of said power transistor by virtue of its said collector, like the collectors of the others of said transistors (T_1, T_2, T_3), being provided by said common substrate, the base-emitter path of said auxiliary transistor (T_4) being connected for receiving current flowing between said tap and said Zener diode cathode.

4,564,772

LATCHING CIRCUIT SPEED-UP TECHNIQUE

Gerald A. Maley, Fishkill, and Douglas W. Westcott, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

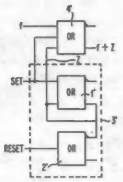
Filed Jun. 30, 1983, Ser. No. 509,273

Int. Cl.[4] G11C *5/06*

U.S. Cl. 307—443 4 Claims

1. In a latching circuit array of logic gates wherein a latch comprising some of said gates and responsive to a logic signal is drivably connected to an output logic circuit comprising at least one other of said gates,

said latch having an output gate having at least two inputs, said output gate and said one other of said gates being of the same kind,



means for connecting each of the inputs of said output gate of said latch to respective ones of inputs of said one other of said gates, and

means for applying at least one additional signal to at least one additional input of said one other of said gates but not to any of said gates of said latch.

4,564,773

SEMICONDUCTOR GATE ARRAY DEVICE HAVING AN IMPROVED INTERCONNECTION STRUCTURE

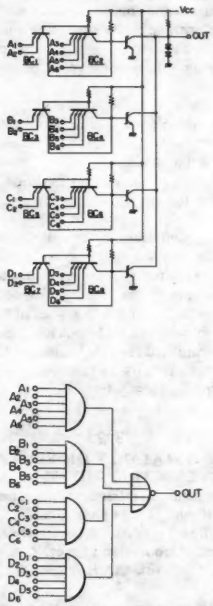
Tetsu Tanizawa; Hitoshi Omichi, both of Kawasaki, and Yoshiharu Mitono, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 11, 1982, Ser. No. 407,148

Claims priority, application Japan, Aug. 13, 1981, 56-127072

Int. Cl.[4] H03K *19/177, 19/003, 19/088;* H01L *27/00*

U.S. Cl. 307—445 3 Claims



1. A semiconductor device having a gate array structure, wiring channels, and wiring lines, comprising:

macro-cells formed on a semiconductor chip, each of said macro-cells comprising:

basic cells having terminals and performing a logic function; and

at least one of said macro-cells comprising more than a minimum number of said basic cells necessary to perform the logic function to be realized by said at least one of said macro-cells, thereby decreasing the ratio between the number of terminals in said at least one of said macro-cells and the number of wiring channels across said at least one of said macro-cells, on and along which the wiring lines are distributed.

4,564,774

BINARY LOGIC DEVICE HAVING INPUT AND OUTPUT ALTERNATING SIGNALS

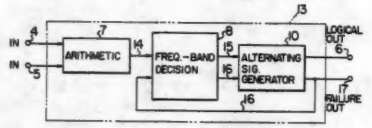
Korefumi Tashiro, Hitachi, and Hiroyuki Akiyama, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 5, 1983, Ser. No. 520,687

Claims priority, application Japan, Aug. 9, 1982, 57-137312

Int. Cl.[4] H03K *19/003*

U.S. Cl. 307—479 **17 Claims**



1. A logic device responsive to the frequencies of alternating signals which lie in predetermined frequency-bands having a one-to-one relationship to input logical values for performing logical operations, comprising:

means for inputting at least two input alternating signals;

arithmetic operation means connected to said inputting means for arithmetically operating on the frequencies of said two input alternating signals to provide a resultant signal having a frequency representing the result of the arithmetic operation;

decision means connected to the output of said arithmetic operation means for deciding among said predetermined frequency-bands which frequency-band the frequency of said resultant signal lies;

means responsive to the result of said decision by said decision means for delivering an alternating output signal having one of a number of predetermined frequencies which represent output logical values in a one-to-one relationship; and wherein said arithmetic operation means includes means for processing said alternating input signals to provide a resultant signal whose frequency is the arithmetic result of the frequencies of the input alternating signals, and wherein said decision means includes means for comparing said resultant signal of the arithmetic operation with a plurality of reference alternating signals to perform the frequency-band decision.

4,564,775

DEVICE FOR ROTATABLY DRIVING A COOLING FAN OF AN ELECTRIC ROTATING MACHINE

Alfred B. Mazzorana, Venissieux, France, assignor to Societe de Paris et du Rhone, S.A., Lyons, France

Filed Apr. 4, 1983, Ser. No. 482,434

Claims priority, application France, Apr. 15, 1982, 82 06800

Int. Cl.[4] H02K *9/06*

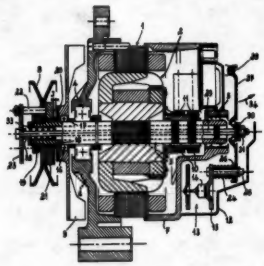
U.S. Cl. 310—62 **13 Claims**

1. In combination with an alternator intended for generation of electric current in a motor vehicle, said alternator normally operating at or below a characteristic operating temperature, and including a stator, a rotating shaft, a rotor mounted on the shaft, and fan means carried coaxially by the shaft for temporary cooling of the alternator, the combination comprising:

a bridge diode rectifier connected to said alternator;

means for mounting said fan means for free rotation on said shaft;

friction clutch means including means for selectively controlling the mechanical connection of said fan means with said shaft to drive said fan means in rotation with said shaft; and



temperature sensitive means including spring means, made of a "memory alloy", for effecting the connection of the fan means with said shaft, said temperature sensitive means being sensitive to a rise in temperature associated with said bridge diode rectifier for actuating said controlling means, and controlling the engagement of said friction clutch means to drive the fan means in rotation with said shaft when the temperature detected on the bridge diode rectifier corresponds to a temperature in excess of said characteristic normal operating temperature of the alternator.

4,564,776

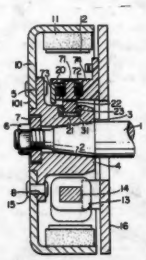
MAGNETO DEVICE FOR GENERATING SIGNALS

Tosio Tomite, Katsuta; Nobuhiko Ogasawara, Mito; Kaniti Isii, and Hisanobu Kanamaru, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 45,971, Jun. 6, 1979, Pat. No. 4,403,402. This application Jun. 22, 1983, Ser. No. 506,868

Int. Cl.[4] H02K *11/00*

U.S. Cl. 310—70 R **7 Claims**



1. A magneto device for generating signals, the magneto device comprising a pole piece assembly secured to a soft steel rotary body and including a permanent magnet and a pole piece block, and a stationary signal output coil cooperative with said pole piece assembly, a recess formed in said rotary body at a position where said pole piece assembly is firmly held in said rotary body, said recess being dimensioned so as to accommodate said permanent magnet and pole piece block therein in this order while leaving an annular space between a

wall of said recess and said permanent magnet and pole piece block, and a key means made of a non-magnetic metal keyed in said annular space by pressing for securing said pole piece assembly to said rotary body.

4,564,777

REINFORCED PERMANENT MAGNET ROTOR WITH CAST ZINC

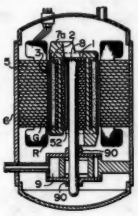
Masaharu Senoo, Narashino; Keizi Noma, Funabashi; Akira Saruta, Chiba; Masanori Yoshizaki, Yachiyo; Koichi Teshirogi, Narashino, and Kouei Yaegashi, Funabashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 24, 1984, Ser. No. 603,430

Claims priority, application Japan, Apr. 27, 1983, 58-72832; Mar. 2, 1984, 59-38509

Int. Cl.⁴ H02K *21/12*

U.S. Cl. 310—156 **9 Claims**



1. A rotor comprising a cylindrical rotor core, plural permanent magnets arranged on the outer periphery of said rotor core, a protective cover on the outer periphery of said permanent magents, said rotor core including an axial through hole, and end rings which are positioned on both ends of said through hole of the rotor core and are integrally cast by molten metal of zinc said end rings including a balance weight, said protective cover covering at least a portion of the outer periphery of said end rings.

4,564,778

DC BRUSHLESS ELECTROMAGNETIC ROTARY MACHINE

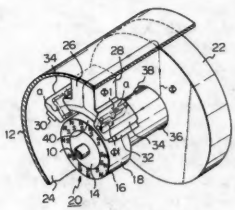
Makoto Yoshida, Machida, Japan, assignor to Aupac Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1984, Ser. No. 590,285

Claims priority, application Japan, Mar. 31, 1983, 58-55561

Int. Cl.⁴ H02K *23/00*

U.S. Cl. 310—177 **17 Claims**



1. A dc electromagnetic rotary machine comprising:

permanent magnet means for producing magnetic flux, said permanent magnet means having a generally circular hollow shape which has outer and inner cylindrical surface portions, said outer cylindrical surface portion being magnetized in one magnetic polarity and the inner cylindrical surface portion being magnetized in the other magnetic polarity opposite to the one polarity;

rotor shaft means for fixedly carrying said permanent magnet means thereon;

casing means including a magnetically permeable substance for rotatably supporting said rotor shaft means;

armature core means fixedly supported by said casing means so as to face substantially the one surface portion of said permanent magnet means for permeating the magnetic flux therethrough;

coil means supported by said armature core means for conducting current therethrough, a portion of said coil means being positioned in a gap formed between said armature core means and said permanent magnet means; and

magnetic-path forming means extending from said casing means toward said rotor shaft means for bridging the magnetic flux between said casing means and said permanent magnet means;

whereby the current flowing over said coil means causes the magnetic flux emanating from said permanent magnet means to be turned partially.

4,564,779

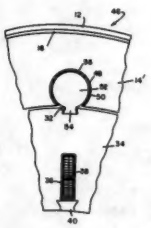
DYNAMOELECTRIC MACHINE STATOR USING CYLINDRICAL KEYBARS

Vincent G. Terry, Jr., Beverly, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Sep. 14, 1984, Ser. No. 650,392

Int. Cl.⁴ H02K *1/12*

U.S. Cl. 310—258 **2 Claims**



1. Apparatus for a stator of a dynamoelectric machine comprising;

a plurality of parallel annular web plates;

a plurality of circular holes equally chordally spaced apart in an inner edge of each of said annular web plates, an axis of said circular holes being parallel to an axis of said stator;

a perimeter of each of said circular holes being broken at an inner perimeter of its respective annular web plate to form an opening;

corresponding ones of said circular holes in each of said annular web plates being axially aligned to form a plurality of sets of axially aligned circular holes;

a plurality of keybars equal in number to said plurality of circular holes;

each of said keybars including a cylindrical portion and a dovetail portion;

said cylindrical portion being accurately fittable into one of said sets of axially aligned circular holes;

said dovetail portion of each of said keybars being radially extendable through said opening toward a center of said stator; and

at least one weld bead at an interface between each of said circular holes and its keybar cylindrical portion whereby said keybars are rigidly affixed to said annular web plates.

4,564,780
ELECTRICAL MACHINE HAVING A QUICKLY RELEASABLE STATOR

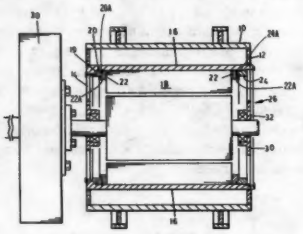
Gert Nel, Transvaal, South Africa, assignor to Eastway Holdings Limited, Middlesex, England

Filed Mar. 13, 1984, Ser. No. 589,002

Claims priority, application South Africa, Mar. 14, 1983, 83/1722

Int. Cl.[4] H02K *15/02, 15/16*

U.S. Cl. 310—258 8 Claims



1. An electrical machine comprising a casing, a rotor mounted within the casing, and a stator disposed coaxially around the rotor, the stator being axially slidable into and from said casing, annularly arranged chamfered contact surface means on axial ends of the stator and facing in opposite directions, annularly arranged chamfered locating surface means disposed within the casing in axially spaced relationship and arranged to engage and sandwich the contact surface means therebetween, and an end plate securable to an end of the casing for axially clamping said chamfered contact and locating surface means together, said end-plate being releasable to allow unclamping of said chamfered contact and locating surface means to enable the stator to be removed axially from the casing.

4,564,781
ELECTRICAL BELL TYPE MOTOR

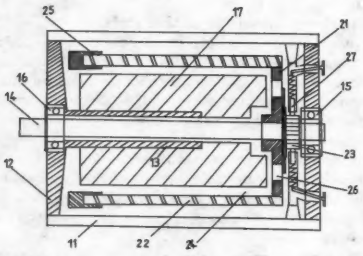
Richard E. Arnegger, Rietlirain, 8713 Uerikon, Switzerland

Continuation-in-part of Ser. No. 402,837, Jul. 29, 1982, abandoned. This application Jun. 26, 1984, Ser. No. 624,839

Claims priority, application Switzerland, Aug. 7, 1981, 5088/81

Int. Cl.[4] H02K *1/22*

U.S. Cl. 310—261 3 Claims



1. Electrical bell type motor for driving a surgical hand tool, with a stator comprising a magnet having the shape of a circular cylinder and a rotor, which comprises a wire coil of lacquered wire forming a hollow circular cylinder, and a rotor carrier plate carrying the wire coil and being fixed to a rotatable shaft, in which the wire coil with one of its ends is firmly mounted onto the rotor carrier plate and the other end is self-supporting, wherein the rotor carrier plate consists of a very thin disc of antimagnetic stainless steel and in which the rotor carrier plate together with the wire coil exposed at least twice to a temperature between 130° and 170° C. in dry condition and at least twice at a temperature between 130° and 160° C. in a wet surrounding, preferably in steam and a ring shaped cover of U-shaped cross-section is arranged over the other end of the wire coil which cover is made of antimagnetic stainless steel.

4,564,782
CERAMIC FILTER USING MULTIPLE THIN PIEZOELECTRIC LAYERS

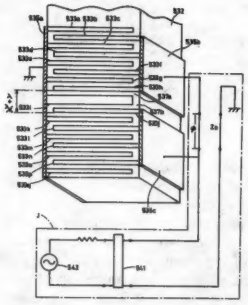
Toshio Ogawa, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Aug. 29, 1984, Ser. No. 645,301

Claims priority, application Japan, Sep. 2, 1983, 58-162423; Sep. 9, 1983, 58-167201; Sep. 16, 1983, 58-171831; Sep. 27, 1983, 58-179676; Sep. 29, 1983, 58-182473; Dec. 7, 1983, 58-232163; Jan. 9, 1984, 59-2362; Jan. 17, 1984, 59-6854; Mar. 26, 1984, 59-43595; Mar. 28, 1984, 59-61710

Int. Cl.[4] H01L *41/08*

U.S. Cl. 310—359 23 Claims



1. A ceramic filter comprising:

a multi-layered piezoelectric ceramic body including a plurality of stacked ceramic sheets, said ceramic body having a thickness extending through said plurality of stacked sheets and first and second opposite ends separated along said thickness, said ceramic being polarized in one direction along a direction corresponding to said thickness;

bulk wave eliminating means for eliminating bulk waves which produce spurious vibrations other than utilizable bulk waves located at, at least one of said first and second ends of said ceramic;

an input electrode group including a plurality of internal input electrodes, at least one electrode being formed on each sheet of a selected group of said sheets lying adjacent said first end of said ceramic body, adjacent ones of said input electrodes overlapping each other along said thickness of said ceramic body;

an output electrode group including a plurality of internal output electrodes, at least one electrode being formed on each sheet of a selected group of said sheets lying adjacent said second end of said ceramic body, adjacent ones of said output electrodes overlapping each other along said thickness of said ceramic body, said input and output groups overlapping each other along said thickness and being spaced a predetermined distance apart, alternate internal electrodes which follow one another in each said input and output electrode groups being led out to respective first and second lateral sides of said piezoelectric ceramic;

a first pair of external electrodes having first and second external contacts for contacting, respectively, said input internal electrodes which are led out at said first and

second lateral sides, and a second pair of external electrodes having first and second external contacts for contacting, respectively, said output internal electrodes which are led out at said first and second sides; and

means for applying a voltage to at least one of said input electrodes and producing an output at said output electrode group in response to vibrations which propagate from said input group to said output group.

4,564,783

HALOGEN INCANDESCENT LAMP-AND-REFLECTOR UNIT

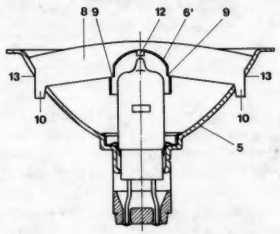
Rudolf Krieg, Munich, and Friedrich Ziegler, Wolfratshausen, both of Fed. Rep. of Germany, assignors to Patent-Treuhand Gesellschaft für Elektrische Glühlampen GmbH, Munich, Fed. Rep. of Germany

Filed Jun. 6, 1983, Ser. No. 501,422

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1982, 8219740[U]

Int. Cl.⁴ H01K *1/26*

U.S. Cl. 313—113 **4 Claims**



1. Halogen incandescent lamp and reflector unit having

a generally cup-shaped metal reflector (**5**) having a base and a rim at the open end thereof;

a halogen incandescent lamp bulb (**4**) secured and mounted in the reflector through the base of reflector;

and a shielding cap (**6'**) covering the tip of the bulb to prevent direct radiation from the lamp, the improvement comprising

means for reliably and permanently holding the shielding cap in position with respect to the bulb (**4**) and the reflector (**5**) even upon application of twisting force and, selectively, of a pushing force about the lamp axis and, selectively, towards the lamp base applied to the shielding cap, said means consisting of

a holding strip (**8**) to which the cap (**6'**) is secured, the holding strip being formed with a central cut-out having the outer shape of the cap (**6'**), the cap fitting into the cut-out and being engaged by the region of the strip (**8**) surrounding the central cut-out,

said holding strip being in form of a flat sheet-metal element extending transversely of the reflector in form of a bridge, from a first end portion of the reflector to a diametrically located second end portion of the reflector to span said reflector,

said holding strip (**8**) being positioned in a plane parallel to the axis of the reflector;

the holding strip being formed with flaps (**10**) adjacent its end portions;

the reflector being formed with slits (**13**) adjacent the rim thereof matching said flaps, said flaps (**10**) of the holding strip being secured in said slits by twist deformation of the flaps after having been introduced through the slits of the reflector;

the cap (**6'**) is formed with at least two slits (**11, 11'**) in the region of engagement with the strip (**8**); and

at least a first and second projection (**11, 11'**) is formed on the strip (**8**), extending from the strip, matching respective slits (**11, 11'**) in the cap (**6'**) and fitting through respective ones of said slits in the cap, at least a first one of the projections (**12**) securing the cap (**6'**) in position by deformation of said at least first one projection after having been introduced through the respective slit (**11**), and a second projection (**9**) fitting through a matching other one of the slits (**11'**) and retaining the cap in the cut-out of the strip (**8**) in non-rotatable and secure engagement against said central cut-out.

4,564,784

REDUCED DEGRADATION, HIGH RESOLUTION IMAGE PICKUP TUBE

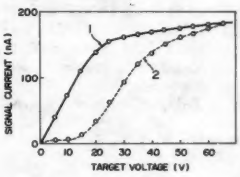
Sachio Ishioka, Tokyo; Yoshinori Imamura, Kanagawa; Tadaaki Hirai, Koganei; Saburo Nobutoki, and Akio Maruyama, both of Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 16, 1983, Ser. No. 552,477

Claims priority, application Japan, Nov. 26, 1982, 57-206150

Int. Cl.⁴ H01J *29/06, 29/56, 31/38*

U.S. Cl. 313—384 **20 Claims**



1. An image pickup tube comprising a target composed of a light-transmissible plate, a transparent electrode provided on said light-transmissible plate, and a photoconductor made of hydrogen-containing amorphous silicon provided on said transparent electrode; an electron beam generator; and a mesh electrode near the target, at least the surface of said mesh electrode being made of at least one member selected from the group consisting of beryllium, boron, carbon, magnesium, aluminum and silicon.

4,564,785

ENVELOPE STRUCTURE FOR FLAT CATHODE RAY TUBE

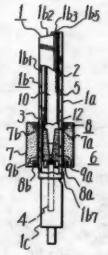
Hiroki Sato, Chiba; Takehisa Natori, Fujisawa, and Takao Nakano, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 322,269, Nov. 17, 1981, abandoned. This application May 2, 1984, Ser. No. 604,611

Claims priority, application Japan, Nov. 26, 1980, 55-168938

Int. Cl.⁴ H01J *29/86*

U.S. Cl. 313—422 **5 Claims**



1. A flat type cathode ray tube, comprising, a flat envelope formed of a flat panel and a dish-shaped funnel, said glass

dish-shaped funnel formed with a flange portion about its periphery, a first deflection system composed of a back electrode and a phosphor screen which are both located within said envelope in opposing relation to each other, a neck portion coupled to said envelope, said neck portion extending in the surface direction of said flat envelope and having therein an electron gun, and a second deflection system formed of electro-static deflection plates which are so located that they oppose each other and mounted on opposite sides of a path of an electron beam emitted from said electron gun and mounted between said first deflection system and said electron gun, said flat envelope having a projecting portion which extends from the outer edge of said flange portion and said projecting portion being thinner than the body of said flange portion, and being the same material as said funnel and said projecting portion having surfaces which are offset from the surfaces of said flange portion which is sealed to said panel, wherein when said projecting portion is cut work stresses are not set up in said flange.

4,564,786

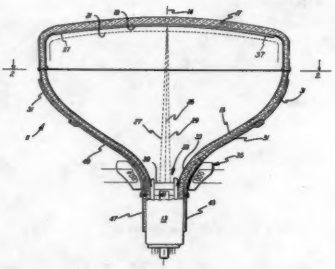
EXTERNAL NECK CHARGE DISSIPATION MEANS FOR AN IN-LINE COLOR CATHODE RAY TUBE

Steven A. Baum, Seneca Falls; Anthony V. Gallaro, Auburn; Frederick A. Hovey, Geneva; Charles H. Rehkopf, and William J. Sember, both of Seneca Falls, all of N.Y., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Mar. 19, 1984, Ser. No. 591,079

Int. Cl.[4] H01J *29/88*

U.S. Cl. 313—479 **6 Claims**



1. An improvement in an in-line color cathode ray tube having an envelope formed of an intergration of a forwardly oriented viewing panel portion, an intermediate funnel portion, and a rearward neck portion, a cathodoluminescent screen of a plurality of phosphor elements disposed on the interior surface of the viewing panel, an aperture mask positioned adjacent the screen, an in-line plural beam electron gun assembly, said assembly embodying three electron-generating cathodes and a plurality of electrodes, including a beam forming electrode, an initial accelerating electrode, a final focusing electrode and a final accelerating electrode, each of said electrodes having a center and two side apertures, said gun assembly positioned in said neck portion in a manner to project said beams to pass through the mask and converge upon the screen, an external electrically conductive coating disposed on said funnel portion, and a deflection yoke oriented to surround the envelope at substantially the transition area between the funnel and neck portions, to provide magnetic fields for electron beam deflection,

said improvement being external neck charge dissipation means comprising: at least one longitudinal stripe of conductive material disposed on the exterior surface of said neck portion over substantially the entire narrow side of the gun assembly; and electrical connective means joining said neck charge dissipation means with the external conductive coating; the electrical connective means comprising a single conductive strip located on the side of the tube corresponding to the low voltage side of the yoke, and having an electrical resistance of about 10^6 to 10^{10} ohms/-centimeter.

4,564,787

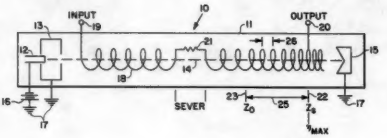
LINEARIZED TRAVELING WAVE AMPLIFIER WITH HARD LIMITER CHARACTERISTICS

Henry G. Kosmahl, Olmsted Falls, Ohio, assignor to The United States of America as respresented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 492,522, May 9, 1983, abandoned. This application Mar. 20, 1985, Ser. No. 714,051

Int. Cl.[4] H01J *25/34*

U.S. Cl. 315—3.6 **7 Claims**



1. In a traveling wave tube (TWT) having a long axis, an output point Zs, an input point, a slow wave structure (SWS), comprised of repeating structural elements disposed along said long axis at least from said input to said output and including at least one sever between said input and said output, the improvement comprising a gradual reduction of the axial spacing of said repeating structural elements at an exponential rate from a point Z_o on the SWS at which efficiency is about 0.1% to said output point Z_s whereby the linearity and efficiency of the TWT are greatly increased by the dynamic velocity taper resulting from the gradual decrease of axial spacing of said repeating structural elements.

4,564,788

DELAY LINE FOR HIGH-PERFORMANCE TRAVELING-WAVE TUBES, IN THE FORM OF A TWO PART-TUNGSTEN AND MOLYBDENUM-RING RIBBON CONDUCTOR

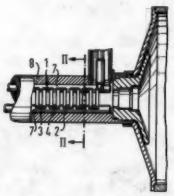
Wolf Wiehler, Neubiberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 28, 1983, Ser. No. 518,143

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1982, 3228529

Int. Cl.[4] H01J *25/34*

U.S. Cl. 315—3.6 **6 Claims**



1. In a traveling-wave tube delay line for high-performance tubes having a massive vacuum-tight copper vacuum enclosure enclosing the delay line, the improvement comprising the delay line being disposed between an electron beam gun assembly and an electron beam collector, a plurality of support rods of a dielectric material extending parallel with the delay line for supporting the delay line, the delay line having two parts,

the first part being adjacent the gun assembly end which is highly thermally stressed and consists essentially of tungsten and the second part being spaced away from the first gun assembly end and which is less thermally stressed and consists esentially of molybdenum.

4,564,789

DIMMER FOR USE WITH VEHICLE

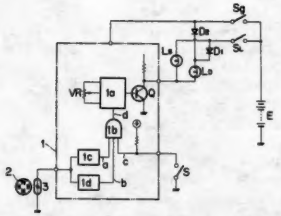
Sadao Kokubu, Aichi, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Jan. 26, 1984, Ser. No. 574,254

Claims priority, application Japan, Jan. 31, 1983, 58-12983

Int. Cl.⁴ B60Q *1/26*; B62D *45/00*

U.S. Cl. 315—79 **10 Claims**



1. A dimmer for use with a vehicle comprising

sensing means for sensing a vehicle speed to generate a first signal corresponding thereto;

vehicle speed detecting means for receiving said first signal and detecting a substantial vehicle speed which is within a predetermined range to generate a second signal;

circuit means for controlling a light source in accordance with said second signal from said vehicle speed detecting means; and

a logic circuit for producing an output to operate said circuit means.

4,564,790

FLAT ELECTRON BEAM TUBE HAVING A GAS DISCHARGE AS ELECTRON SOURCE

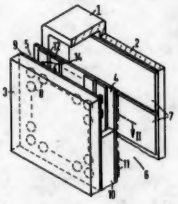
Werner Veith, Heidelberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 17, 1983, Ser. No. 505,308

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1982, 3222850

Int. Cl.⁴ H04N *3/16*; H05B *37/00*

U.S. Cl. 315—169.4 **7 Claims**



1. Flat electron beam tube comprising:

(a) a gas-filled enclosure defined by two mutually parallel plates, namely a front plate and a rear plate disposed one behind the other in viewing direction;

(b) said enclosure having an interior space subdivided by a control plate extending parallel to the planes of said front and said rear plates, into a front chamber defining a post-acceleration space, and a rear chamber defining a gas discharge space;

(c) said rear plate carrying at least one cathode on an inner side thereof, said cathode being a gas discharge cathode;

(d) said front plate carrying, on an inner side thereof, a luminescent layer excitable by electrons, and a post-acceleration anode;

(e) said control plate being formed with a plurality of regularly arranged electron inlet openings on a side thereof facing towards said gas discharge space;

(f) said control plate carrying on said side thereof facing towards said gas discharge space, a family of mutually parallel strip-shaped row conductors, via which an introduction of electrons into said electron inlet openings is controllable by an application of given voltages;

(g) said control plate being formed with a plurality of regularly arranged electron outlet openings on a side thereof facing towards said post-acceleration space;

(h) said control plate carrying on said side thereof facing towards said post-acceleration space, a family of mutually parallel, strip-shaped column conductors, extending perpendicularly to said row conductors and via which a discharge of electrons out of said electron outlet openings is controllable by an application of given voltages;

(i) said control plate being formed with through-outputs connecting said electron outlet openings with said electron inlet openings so as to form passages for electrons from said gas discharge space;

(j) said row conductors being connected to a first voltage source which, when one of said row conductors is addressed, delivers a more positive potential relative to the potential of said gas discharge cathode in a manner that an electron-supplying gas discharge burns between the gas discharge cathode and the addressed row conductors;

(k) said column conductors being connected to a second voltage source which, during the time wherein a given row conductor is addressed, supplies corresponding signal voltages;

(l) said post-acceleration anode being connected to a third voltage source applying a positive potential to said post-acceleration anode which is so high that the electrons traveling from said gas discharge into said post-acceleration space are accelerated to several kV and finally strike said luminescent layer;

(m) mutually associated electron inlet openings and electron outlet openings being disposed in non-overlapping relationship in a direction perpendicular to the plane of said front and said rear plates; and

(n) said second voltage source applying a potential to said column conductors which is always lower than that of said row conductor being then addressed.

4,564,791

OPERATORS FOR SLIDING GATES

Joseph L. Brickner, 3046 Skywood, Orange, Calif. 92665

Filed Sep. 16, 1983, Ser. No. 532,905

Int. Cl.⁴ H04Q *7/02*; H02P *1/44*

U.S. Cl. 318—16 **3 Claims**

1. A gate operator, comprising:

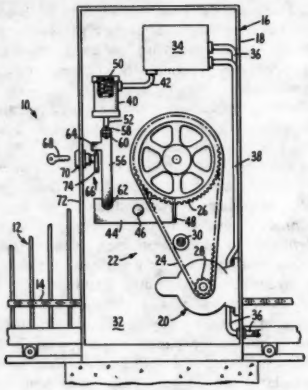
a gate drive motor;

a shaft speed reducer comprising a gear coupled to said motor;

a detent for engaging the teeth of said gear and thus preventing rotation of said gear and movement of said gate;

solenoid means for withdrawing said detent from said teeth against the urging of a return spring;

solenoid energizing means for energizing said solenoid when said motor is energized; and



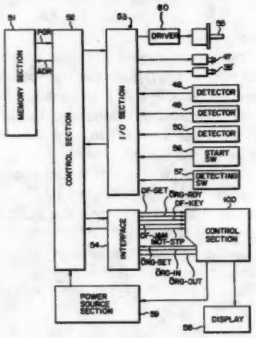
cam means for selectively withdrawing said detent from said teeth against the urging of said return spring.

4,564,792

DOCUMENT FEEDER

Yukihiro Fukushi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 20, 1983, Ser. No. 563,443
Claims priority, application Japan, Dec. 22, 1982, 57-225223
Int. Cl.[4] H02K *29/02*
U.S. Cl. 318—254 **10 Claims**



1. A document feeder comprising:

a brushless motor including a stator provided with plural slots into which plural wingings are provided, and a rotor provided with a permanent magnet;

document conveying means which is driven by said brushless motor, to convey documents;

rotation detecting means, disposed on said brushless motor, to generate at least one signal which accurately corresponds to the amount of rotation of said brushless motor;

drive means for driving said brushless motor in response to output signals of said rotation detecting means; and

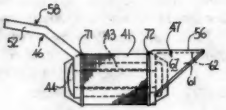
control means for determining the amount of movement of the document from the output signals of said rotation detecting means and determining the stop timing of said brushless motor after said document has been moved a predetermined distance.

4,564,793

BRUSHLESS DC MOTOR WITH IMPROVED STARTING

James Reffelt, Shokan, N.Y., assignor to Rotron, Incorporated, Woodstock, N.Y.

Filed Sep. 28, 1983, Ser. No. 536,885
Int. Cl.[4] H02K *37/00*
U.S. Cl. 318—254 **12 Claims**



1. A DC motor comprising:

a rotor with an annular permanent magnet defining magnetic segments oppositely polarized in the radial outward direction, wherein said segmcnts are arranged circumferentially about the magnet;

a stator having electromagnet structure outside said annular magnet, said structure including coil means for establishing magnetic fields of opposite polarities to attract the oppositely polarized segments of and for applying continuous rotational torque to the annular magnet;

position detecting means for detecting the position of the rotor relative to the stator and for commutating electrical current to the coil means to repeatedly produce said opposite polarity fields and attract said segments in dependence on said relative positioning;

the electromagnet structure including a pair of pole pieces in flux conducting relation to the coil means;

a first of said pole pieces having a position with a face thereof facing an outer circumferential surface of the permanent magnet across a first air gap defined between the face and the permanent magnet; and

a second of said pole pieces having an edge surface thereof facing generally towards the outer circumferential surface across a second air gap defined between the edge surface and the permanent magnet;

the first pole piece that faces the permanent magnet outer face circumference being broader in the axial direction than the edge of the second pole piece that faces generally towards the outer circumferential surface.

4,564,794

PHASE LOCKED LOOP AND A MOTOR CONTROL SERVO

Richard S. Kilen, Longmont, and Larry E. Rittenhouse, Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 23, 1985, Ser. No. 737,003
Int. Cl.[4] H02P *5/16;* **G05B** *5/00*
U.S. Cl. 318—314 **13 Claims**

1. A phase lock loop, comprising:

a high frequency clock (21),

a counter (200) driven by said clock,

a low frequency source (22) of a repeating input pulse (TACH),

a first data latch (26) controlled by said input pulse and operative to receive the numerical content of said counter upon the occurrence of each of said input pulses,

a reference number (REF) whose magnitude is indicative of the number of high frequency clock pulses which should occur between each pulse of said low frequency source,

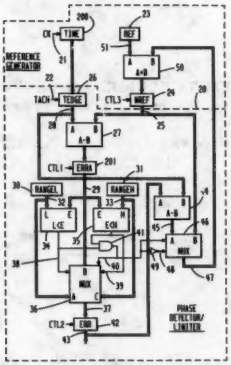
a second data latch (24) initially containing said reference number,

digital phase detector means (27) receiving as input the content of said first and second data latches, and providing an output signal (ERRA) indicative of the numeric difference which exists between these two inputs,

range defining means operable to generate a high magnitude number (RANGEH) defining an upper limit of numeric difference, and a low magnitude number (RANGEL) defining a lower limit of numeric difference,

testing means (34, 36 and 35) receiving said high and low limit numbers and the numeric difference output of said phase detector means,

said testing means generating an output number which is directly related to said numeric difference when said difference lies between the upper and lower limits which are defined by said high and low magnitude numbers, respectively,



and generating an output number which is directly related to the upper and lower limits, respectively, when said numeric difference is above or below the limits defined by said high and low magnitude numbers, respectively, and

reset means (46 and 50) responsive to said testing means determining that said numeric difference is above or below the limits defined by said high and low magnitude numbers, and operable in response thereto to reset the number content of said second data latch in a manner intended to bring said numeric difference within the range defined by said upper and lower limits upon the occurrence of a subsequent input pulse.

4,564,795

MOTOR SPEED CONTROL SYSTEM

Christopher W. Parkes, San Francisco, and Robert C. Franklin, Los Gatos, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 332,578, Dec. 21, 1981. This application Jan. 20, 1984, Ser. No. 572,134

Int. Cl.[4] H12P *5/16*; H02P *5/36*

U.S. Cl. 318—314 **18 Claims**

1. In a motor speed control system having a first signal generating device for producing a digital feedback signal having a frequency indicative of the actual speed of the motor, and a second signal generating device for producing a digital reference signal having a frequency indicative of the desired speed of the motor, the improvement comprising:

(a) a phase comparator having first and second inputs and an output, one of said first or second inputs receiving one of said feedback signal or said reference signal and the other of said inputs receiving the other of said signals,

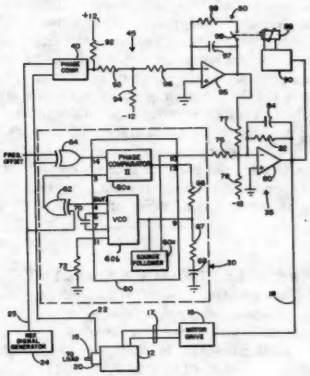
(b) a voltage controlled oscillator having an input and an output,

(c) means including low pass filter for connecting the output of the phase comparator to the input of the voltage controlled oscillator,

(d) means for connecting the first input of the phase comparator to receive said one of the feedback and reference signals,

(e) first digital signal combining means for combining the signal at the output of the voltage controlled oscillator with said other of the feedback and reference signals, said signal combining means having an output connected to the second input of the phase comparator,

(f) summing amplifier means having an input and an output, said input receiving an output signal from said low pass filter,



(g) whereby the signal at the output of the low pass filter comprises a speed difference signal that varies in accordance with the difference between the actual and desired speed of the motor and is substantially independent of the phase angle between the feedback and reference signals and said speed difference signal is linearly proportioned by said summing amplifier means to provide a speed control signal.

4,564,796

DRIVING CIRCUIT FOR A STEPPING MOTOR

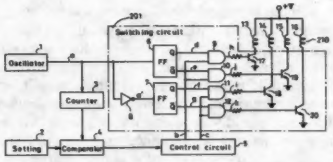
Tsunemi Yoshino, Nara, and Akira Takashima, Osaka, both of Japan, assignors to West Electric Company, Ltd., Osaka, Japan

Filed Jan. 31, 1984, Ser. No. 575,685

Claims priority, application Japan, Feb. 2, 1983, 58-16751

Int. Cl.[4] H02P *8/00*

U.S. Cl. 318—696 **4 Claims**



1. A driving circuit for a stepping motor including a stator having plural magnetic pole pieces, each of said pole pieces including an excitation coil, said circuit comprising:

setting means for inputting a value including a desired rotational angle of a stepping motor,

means for producing a start signal,

oscillating means for producing a pulse train having a predetermined period,

counting means for counting pulses of said pulse train,

comparing means for comparing the count of said counting means with the value inputted by said setting means and

for issuing a stop signal when said count and said inputted value become equal to one other,

control means for producing a first control signal beginning when said start signal producing means produces said start signal and ending when said comparing means produces said stop signal and for producing a second control signal beginning when said start signal producing means produces said start signal and ending a predetermined time after said first control signal ends, and

switching means comprising a plurality of switching devices connected to respective excitation coils of said stepping motor, for operatively selectively exciting selected ones of said magnetic pole pieces in response to said first and second control signals and said pulse train, said switching means for applying excitation current to said excitation coils in a two-phase mode of operation of said stepping motor for the duration of said first control signal, and for applying excitation current to said excitation coils in a single phase mode of operation of said stepping motor from a first point of time when said first control signal ends to a second point of time when said second control signal ends, and for ceasing applying said excitation current after said second point of time.

4,564,797

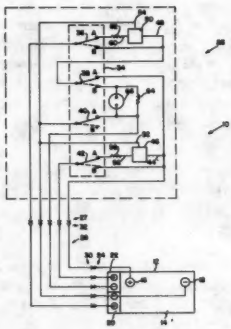
VEHICLE STORAGE BATTERY SYSTEM

Bruce I. Binkley, King County, Wash., assignor to Energy Exchange Systems, Seattle, Wash.

Continuation-in-part of Ser. No. 580,618, Feb. 16, 1984. This application Apr. 19, 1984, Ser. No. 602,139

Int. Cl.[4] H02J *7/00, 7/14*

U.S. Cl. 320—2 **16 Claims**



1. A vehicle storage battery system, comprising:

a storage battery having three integrally manufactured separate storage battery portions, including a main battery portion having a capacity sufficient for starting the engine of a vehicle under normal circumstances, a first standby battery portion and a second standby battery portion, said first and second standby battery portions when connected in series having a combined nominal voltage which is greater than the voltage of said main battery portion, said nominal voltage of said first and second standby battery portions each being less than the nominal voltage of said main battery portion, said first and second standby battery portions having a rated capacity smaller than said main battery portion but sufficient to transfer enough charge to said main battery portion when in a discharged state to start the engine of the vehicle;

a battery control having a first circuit connecting said first and second standby battery portions in series for charging said main battery portion when in a discharged state, said first circuit including means for restricting a charging current flow from said standby battery portions to said main battery portion to a predetermined safe level, and a second circuit connecting said first and second standby battery portions in parallel for recharging said standby battery portions from said main battery portion, said second circuit including means for restricting a recharging current flow to said standby battery portions to a predetermined safe level; and

switch means for switching between said first and second circuits.

4,564,798

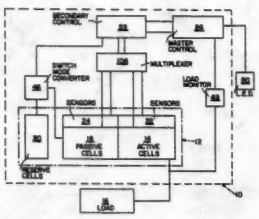
BATTERY PERFORMANCE CONTROL

James E. Young, Newton, Mass., assignor to Escutcheon Associates, Boston, Mass.

Filed Oct. 6, 1982, Ser. No. 433,049

Int. Cl.[4] H02J *7/00*

U.S. Cl. 320—6 **83 Claims**



1. A system for controlling the operation under load of a battery including a plurality of cell-units, said system comprising:

a plurality of sensors adapted for connection to cell-units of said battery and arranged to sense the values of selected physical operating parameters of selected ones of said cell units;

switches for selectively connecting each of said cell-units to one of a source of power and a load, said cell-units connected to said load comprising an active partition and said cell-units not connected to said load comprising a passive partition; and,

a control attached to said sensors and said switches, said control being arranged to receive from said sensors data representative of sensed values of said selected physical operating parameters of selected ones of said cell-units and to switch cell-units from said active partition to said passive partition in response to said data and including means for

(i) storing data representative of predetermined acceptable values of said selected physical operating parameters,

(ii) comparing said data representative of predetermined acceptable values with said data representative of sensed values of said selected ones of said cell-units, and

(iii) causing said switches to disconnect a cell-unit in said active partition from said load and switch said cell-unit into said passive partition when the difference between said data representative of sensed values of said cell-unit and said data representative of said predetermined acceptable values is greater than a predetermined acceptable difference,

said control being arranged to receive data representative of the sensed values of at least two of the temperature, vapor pressure, capacity, pH, current and voltage of a cell-unit of said battery and to switch said cell-unit when a conjoint difference of said two differs from a predetermined standard by more than a predetermined amount.

4,564,799

TWO-BATTERY POWER SUPPLY SYSTEM FOR VEHICLES

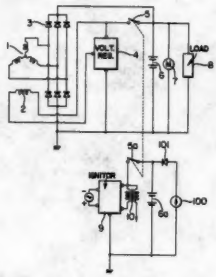
Yoshiyuki Iwaki, Himeji; Akio Matsumoto, and Mitsuyoshi Yokota, both of Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed May 18, 1983, Ser. No. 495,585

Claims priority, application Japan, May 25, 1982, 57-90132; May 25, 1982, 57-90133; May 25, 1982, 57-90134

Int. Cl.[4] H02J *7/00, 7/14*

U.S. Cl. 320—6 **5 Claims**



1. In a two-battery power supply system for vehicles having a generator including an armature coil for generating three-phase alternating current, a field coil associated with the armature coil, a rectifier for converting an A. C. output of the armature coil into a direct current, and a voltage regulator for setting the generated voltage of the armature coil at a constant value by controlling a current flowing through the field coil, a first battery connected across output terminals of the generator, a starting motor and an electric load connected in parallel with the first battery, and an ignition device, the improvement comprising: a second battery connected to said ignition device and providing a power source to said ignition device isolated from said first battery, and means including a power source other than said generator for charging said second battery to provide a stable voltage to said ignition device independent of the voltage of said first battery.

4,564,800

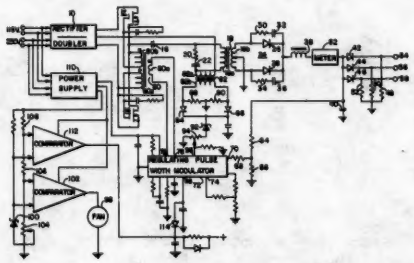
BATTERY CHARGER

Ojars Jurjans, Clementon, N.J., assignor to Jetronic Industries, Inc., Philadelphia, Pa.

Filed Jun. 1, 1984, Ser. No. 616,236

Int. Cl.[4] H02J *7/04*

U.S. Cl. 320—36 **7 Claims**



1. A battery charger comprising:

means for developing a d-c voltage from an a-c line voltage;

switching means, including a first transformer and a pair of field effect transistors connected in a half-bridge configuration, for chopping said d-c voltage to produce a pair of identical time displaced pulse trains having a variable duty cycle and a frequency substantially higher than the frequency of said a-c line voltage, a first secondary winding of said first transformer connected between the gate and source of one of said field effect transistors and a second secondary winding of said first transformer connected between the gate and source of the other of said field effect transistors;

a step-down transformer for converting said pulse trains from high-voltage low-current pulse trains to low-voltage high-current pulse trains;

rectifying means responsive to said lowvoltage high-current pulse trains for developing an output d-c voltage and a d-c charging current;

output means for coupling said d-c charging current to a battery which is to be charged;

means for supplying an output voltage reference signal representative of a predetermined output volage;

means for supplying an overload voltage reference signal representative of an excessive overload caused by a battery which is to be charged;

and control means connected to a primary winding of said first transformer and (1) responsive to said output voltage and said output voltage reference signal for controlling said transistors to vary said duty cycle of said pulse trains to reduce differences between said output voltage and said predetermined output voltage, and (2) responsive to a sampling signal representative of current flow through a primary winding of said step-down transformer and said overload reference signal for controlling said transistors to reduce said duty cycle of said pulse trains to a predetermined minimum when said current flow through said primary winding of said step-down transformer rises in response to an overload which exceeds said excessive overload represented by said overload reference signal, said control means including a third transformer having a primary winding connected in series with said primary winding of said step-down transformer and a secondary winding for developing said sampling signal representative of current flow through said primary winding of said step-down transformer.

4,564,801

SEMICONDUCTOR MOUNTED ON A YOKE IN HEAT TRANSFER RELATIONSHIP

David Kirby, Emmaus, Pa., assignor to Lutron Electronics Co., Inc., Coopersburg, Pa.

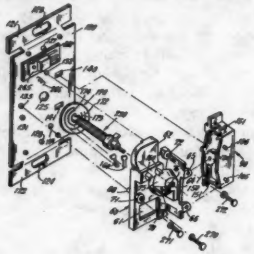
Division of Ser. No. 525,129, Aug. 22, 1983, Pat. No. 4,520,306. This application Apr. 29, 1985, Ser. No. 728,338

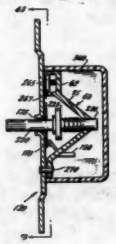
Int. Cl.[4] H05B *39/04*

U.S. Cl. 323—324 **7 Claims**

1. A voltage control switch having a generally flat conductive yoke plate, a power semiconductor device having main power terminals and a control terminal and having an electrically active conductive heat sink, an insulation housing having an integral cavity for receiving said power semiconductor device with the surface of said heat sink facing outwardly of said housing, a thin electrically insulating member disposed on said yoke and disposed between and electrically insulating said yoke and said heat sink surface, and at least one conductive fastener connected to said yoke and to said insulation housing

for fixing said housing to said yoke and for pressing said power semiconductor device into firm engagement with said thin





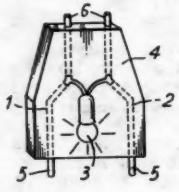
insulating member and into good thermal contact with said yoke.

4,564,802

TEST DEVICE FOR FUSES AND BATTERIES

George G. Collins, P.O. Box 1396, Medina, Tex. 78055

Filed Jul. 15, 1983, Ser. No. 514,103
Int. Cl.[4] G01R *31/00*
U.S. Cl. 324—51 4 Claims



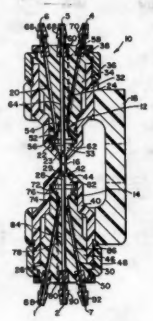
1. A test device comprising a translucent body, an electric bulb in said body adapted to be visible from outside said body upon illumination, and first and second pairs of terminals of electrically conductive material connected to said bulb and projecting at least slightly outwardly of said body, said first pair of terminals spaced apart from 9 to 13 mm, said second pair of terminals spaced apart from 22 to 28 mm, said second pair of terminals projecting from a selected portion of said body opposite to said first pair of terminals.

4,564,803

METHOD AND APPARATUS FOR REMOVING FOREIGN MATTER FROM A FLOW CELL OF A PARTICLE STUDY DEVICE

Mark Loren, Miami Beach, and Raul I. Pedroso, Miami, both of Fla., assignors to Coulter Corporation, Hialeah, Fla.

Filed Aug. 29, 1983, Ser. No. 527,455
Int. Cl.[4] G01N *27/00*
U.S. Cl. 324—71.1 34 Claims



1. A method of removing gas bubbles from a flow cell of a particle study device, said flow cell comprising: at least one chamber, said chamber having a first and a second orifice; a particle introduction means disposed within said chamber, said particle introduction means having an outlet; an aperture means having an aperture, said aperture means being connected to said chamber; a flow path located between said outlet and said aperture; particles in suspension being capable of passing through said aperture and through said flow path for particle study; said method comprising:

injecting a particle free liquid through said first orifice of said chamber, to form a turbulent flow of particle free liquid within said chamber in and near said flow path, and

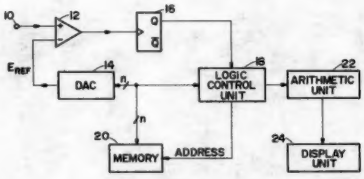
exhausting said turbulent flow of particle free liquid through said second orifice of said chamber, at a point near said flow path.

4,564,804

METHOD AND APPARATUS FOR AUTOMATICALLY DETECTING SIGNAL LEVELS

William G. Wilke, Beaverton, and Michael G. Reiney, Tigard, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 8, 1981, Ser. No. 271,496
Int. Cl.[4] G01R *19/10, 19/00*
U.S. Cl. 324—103 P 15 Claims



1. A method for automatically detecting peak values of an applied unknown electrical signal, comprising:

generating multiple-bit digital signals;

converting said digital signals to analog values thereby to generate a plurality of reference voltage levels;

comparing said reference voltage levels with said unknown applied signals and generating detection signals in re-

sponse to matches of instantaneous values of said unknown applied signals and said reference voltage levels, wherein said reference voltage levels are held for a predetermined time interval if no said matches occur;

storing said detection signals in storage register means; and

changing said digital signals one bit at a time in order from most significant bit to least bit responsive to the contents of said storage register means thereby to produce a digital signal which corresponds to the detected peak value of said unknown electrical signal.

4,564,805

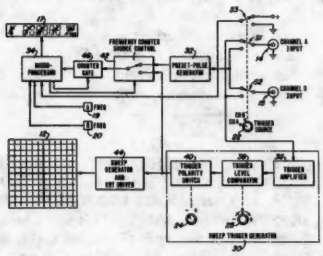
OSCILLOSCOPE WITH INTEGRATED FREQUENCY COUNTER AND METHOD OF MEASURING FREQUENCY

Robert A. Winter, Sioux Falls, S. Dak., assignor to Sencore, Inc., Sioux Falls, S. Dak.

Continuation of Ser. No. 391,002, Jun. 23, 1982, abandoned. This application Aug. 29, 1984, Ser. No. 645,307

Int. Cl.⁴ G01R *13/22*

U.S. Cl. 324—121 R **5 Claims**



5. A method of measuring the frequency of a cyclical recurring portion of the waveform of an input signal, comprising the steps of

applying said input signal to a first input of a trigger pulse generator having adjustable slope and polarity controls,

synchronizing the display on an oscilloscope with said trigger pulses generated by said trigger pulse generator,

adjusting said controls while observing the waveform of said input signal on said oscilloscope to select the portion of said input signal in synchronism with which said generator generates said trigger pulses,

applying said trigger pulses to a frequency counter to measure the frequency of said trigger pulses, and displaying a digital representation of the frequency

at which said trigger pulses occur.

4,564,806

TAUT BAND INSTRUMENT HAVING ACCURATE TAUT BAND POSITIONING MEANS

Hideo Kaise, Ueda, Japan, assignor to Kaise Denki Kabushiki Kaisha, Naganoken, Japan

Filed Nov. 30, 1982, Ser. No. 445,504

Claims priority, application Japan, Apr. 23, 1982, 57-69288; Apr. 23, 1982, 57-69289; Jun. 15, 1982, 57-102686

Int. Cl.⁴ G01R *1/08, 5/02*

U.S. Cl. 324—154 PB **2 Claims**

1. A taut band instrument, comprising:

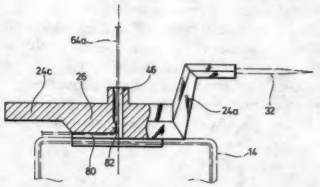
a moving means including a moving coil mounted on a frame means,

a first boss means for supporting an upper portion of said moving coil and having a center hole therein forming an inner wall of said first boss means;

a second boss means for supporting a lower portion of said moving coil and having a center hole therein forming an inner wall of said second boss means;

first and second taut bands for hanging said moving means and being positioned in said center holes of said first and second boss means, respectively; and

at least one of said boss means including a first channel at the bottom thereof for holding said moving means, a second channel being in communication with said first channel



whereby one end of said taut band is fixed within said second channel, and a projection formed in a portion of said inner wall of said boss means projecting into said center hole, said taut band being accurately positioned within said center hole of said boss means by being positioned in contact with said projection.

4,564,807

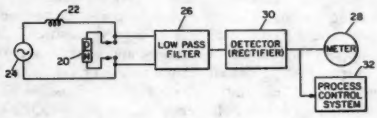
METHOD OF JUDGING CARRIER LIFETIME IN SEMICONDUCTOR DEVICES

Hiroyuki Ikezi, San Diego, and Richard L. Freeman, Del Mar, both of Calif., assignors to GA Technologies Inc., San Diego, Calif.

Filed Mar. 27, 1984, Ser. No. 593,801

Int. Cl.⁴ G01R *31/26*

U.S. Cl. 324—158 D **10 Claims**



9. A method for judging carrier lifetime in a pn junction of a semiconductor device comprising the steps of:

(a) determining the capacitance of a reversely biased pn junction in a semiconductor which is representative of semiconductors in a group of semiconductors to be tested;

(b) coupling an oscillator to the series combination of an inductor and a pn junction of the device to be tested;

(c) causing said oscillator to apply a voltage the frequency of which is slightly above the resonant frequency of said series combination and which has an amplitude above a predetermined level; and

(d) detecting if the waveform appearing across said pn junction has a substantial component below the fundamental frequency component.

4,564,808

DIRECT DETERMINATION OF QUANTUM EFFICIENCY OF SEMICONDUCTING FILMS

Brian W. Faughnan, Princeton, and Joseph J. Hanak, Lawrenceville, both of N.J., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 11, 1983, Ser. No. 474,384

Int. Cl.⁴ G01R *31/26*

U.S. Cl. 324—158 R **11 Claims**

1. A method for determining the quantum efficiency QE(λ) of a single layer semiconductor sample of substantially a single conductive type, have first and second opposed surfaces, wherein the method is independent of built-in photovoltage, comprising the steps of:

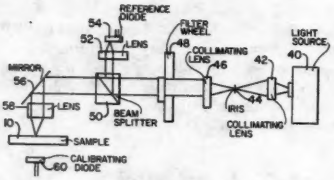
forming, with a first at least partially transparent electrode, a Schottky barrier with at least one of said first and second surfaces of said semiconductor sample;

forming with a second electrode, an electrical connection with the other of said first and said second opposed surfaces of said semiconductor sample;

connecting between said first and second electrodes an external source of bias voltage;

further connecting between said first and said second electrodes, a means for measuring a sample photocurrent $J_s(\lambda)$ in said semiconductor sample;

positioning adjacent said semiconductor sample, a calibrated photocurrent generator having known values of quantum efficiency $QE_c(\lambda)$ for each corresponding calibrated photocurrent $J_c(\lambda)$ generated in said calibrated photocurrent generator in response to illumination thereof by radiant energy having a wavelength λ;



illuminating both said semiconductor sample through said first electrode and said calibrated photocurrent generator under identical light conditions with the same radiant energy, so as to generate photocurrents in said semiconductor sample and said calibrated photocurrent generator;

inducing a voltage across said semiconductor sample with said external source of bias voltage so as to collect said sample photocurrent at said first and second electrodes;

measuring said generated sample photocurrent $J_s(\lambda)$;

measuring said calibrated photocurrent $J_c(\lambda)$;

determining quantum efficiency of the sample, $QE_s(\lambda)$, according to the following relationship:

$$QE_s(\lambda) = \frac{J_s(\lambda)}{J_c(\lambda)} \cdot QE_c(\lambda)$$

4,564,809

EDDY CURRENT TEST METHOD WITH DEGREE OF AMPLIFICATION SELECTED IN ACCORDANCE WITH A COMPENSATION SIGNAL

Gerhard Hüschelrath, Laufach-Frohnhofen; Klaus Abend, Bü dingen, and Ursula Orthen, Hanau, all of Fed. Rep. of Germany, assignors to Nukem GmbH, Hanau, Fed. Rep. of Germany

Filed Jun. 22, 1982, Ser. No. 390,964

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1981, 3125732

Int. Cl.[4] G01N *27/90*; G01R *33/12*

U.S. Cl. 324—225 **4 Claims**

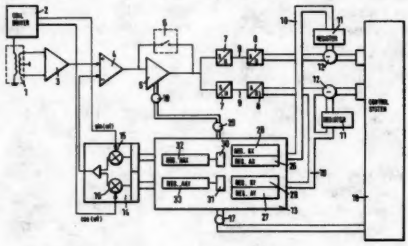
1. In a workpiece testing system wherein a coil generating an alternating magnetic field is moved with respect to a workpiece so as to induce eddy currents therein which eddy currents produce a secondary field which induces a potential in said coil or in a tracer coil, a method for testing said workpiece comprising the steps of:

deriving a reference signal from said secondary field by positioning the coil above a place on said workpiece that is substantially defect free;

superimposing on said reference signal an error correcting signal to cancel any unbalance that may exist due to interfering signals associated with measuring equipment;

generating, in response to said superimposed signal, a compensating signal;

testing the workpiece by moving said coil relative thereto and providing a testing signal derived from said secondary field;



superimposing said compensation signal on said testing signal; and

amplifying said superimposed signals with an amplifier, the degree of amplification of said amplifier being selected in accordance with the level of said superimposed signals to amplify within the dynamic range of the amplifier.

4,564,810

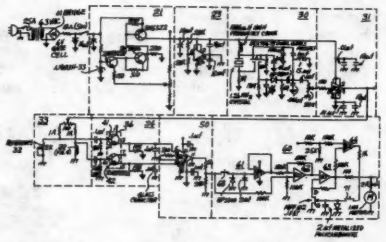
ALUMINUM CLADDING THICKNESS MEASUREMENT PROBE AND INSTRUMENT HAVING AN AUTOMATIC CALIBRATION AND READOUT CIRCUIT COUPLED TO A DIFFERENTIAL AMPLIFIER CIRCUIT

Glenn A. Geithman, Renton, and Albert W. Chau, Redmond, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 307,037, Sep. 30, 1981. This application Sep. 8, 1983, Ser. No. 530,447

Int. Cl.[4] G01B *7/10*; G01R *33/12, 35/00*; G01N *27/72*

U.S. Cl. 324—230 **2 Claims**



1. A cladding thickness measuring signal processing circuit comprising in combination:

a power supply circuit coupled to a voltage regulator circuit;

a low distortion, frequency stable 1.26 MHz oscillator circuit having amplitude feedback for providing amplitude stability;

a power splitter circuit coupled between said voltage regulator circuit and said low distortion, frequency stable oscillator circuit;

a bridge circuit including a test probe input terminal;

a buffer and driver circuit coupled between said low distortion, frequency stable oscillator circuit and said bridge circuit;

a differential amplifier circuit;

a detector circuit having peak detectors with thermo-track-

ing, said detector circuit coupled between said differential amplifier circuit and said bridge circuit; and,

an automatic calibration and readout circuit coupled to said differential amplifier circuit.

4,564,811

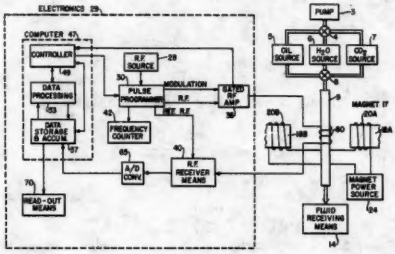
RF CORE ANALYZING MEANS AND METHOD

Robert N. Walker, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,430

Int. Cl.⁴ G01R *33/08*

U.S. Cl. 324—307 **13 Claims**



1. A core analyzer comprising:

test cell means for containing a core of earthen material, said core having a length suitable for monitoring of fluid moving through the core;

means for providing at least two fluids to the test cell means in such a manner that a first fluid fills the core in the test cell means and a second fluid displaces at least a portion of the first fluid, and

means for using nuclear magnetic resonance to monitor the saturation of the core with the first fluid and to monitor the displacing movement of the second fluid.

4,564,812

NUCLEAR MAGNETIC RESONANCE TOMOGRAPHY APPARATUS INCLUDING A FARADAY CAGE

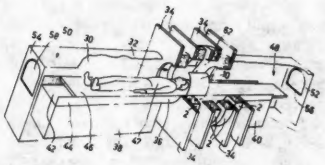
Pieter Van Dijk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 9, 1983, Ser. No. 530,807

Claims priority, application Netherlands, Sep. 20, 1982, 8203621

Int. Cl.⁴ G01R *33/08*

U.S. Cl. 324—309 **16 Claims**



1. A nuclear magnetic resonance tomography apparatus comprising

first coil means for generating a steady main magnetic field and a quasi-steady gradient field, said first coil means being arranged around an examination space for an object to be examined,

second coil means including a coil circuit for generating an RF magnetic field, said second coil means being located within said first coil means,

measurement means for detecting nuclear magnetic resonance signals generated by said object, and

Faraday cage means for electromagnetically shielding said examination space, said Faraday cage means increasing the Q factor of said coil circuit, and said Faraday cage means being arranged between said first coil means and said second coil means,

wherein said Faraday cage means consist mainly of a metal gauze cylinder arranged at least substantially against the inner side of said first coil means,

wherein said Faraday cage means includes an extension at least at one axial end of said first and second coil means,

wherein said extension extending beyond said first and second coil means in the axial direction has a substantially larger transverse dimension than a portion situated within said first and second coils means,

wherein said Faraday cage means consists mainly of a metal gauze having an optical transmission of at least approximately 50%,

wherein said Faraday cage means at least completely surrounds said examination space for a displaceable portion of an object carrier, and

wherein said second coil means is provided on the inner side of the coil circuit with comb-shaped short-circuits for electrical fields generated by current-carrying wires of said second coil means.

4,564,813

NUCLEAR MAGNETIC RESONANCE METHOD AND APPARATUS

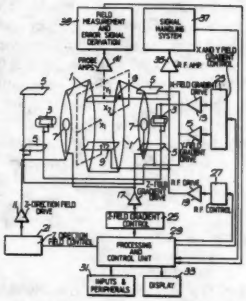
Ian R. Young, Sunbury-on-Thames, and David R. Bailes, London, both of England, assignors to Picker International, Ltd., Wembley, England

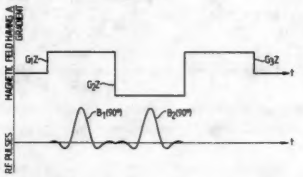
Filed Oct. 27, 1983, Ser. No. 545,964

Claims priority, application United Kingdom, Nov. 10, 1982, 8232144

Int. Cl.⁴ G01R *33/22*

U.S. Cl. 324—311 **9 Claims**





1. A method of obtaining a representation of the spatial distribution of a quantity relating to nuclear magnetic resonance in a selected slice of a larger body, wherein rotation of the spins of a chosen nucleus within the selected slice, about an

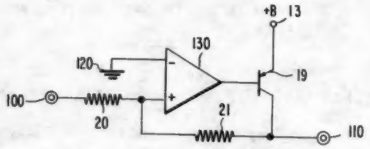
axis perpendicular to the equilibrium axis of magnetic alignment of the spins, is effected through an angle appreciably greater than 90° by applying in sequence two r.f. pulses, each accompanied by a magnetic field oriented in a direction parallel to said equilibrium axis and having a gradient in a direction orthogonal to the plane of said slice, each r.f. pulse being at the Larmor frequency for said nuclei in said slice in the presence of the associated field gradient, and each r.f. pulse being effective to rotate said spins by not greater than 90°, said pulses together being sufficient to rotate the spins through said appreciably greater than 90° angle, and the gradients of said magnetic fields being in opposite directions.

4,564,814

FULL-WAVE RECTIFIER USING AN OPERATIONAL AMPLIFIER

Masami Miura, and Takeshi Kuwajima, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1982, Ser. No. 435,173
Claims priority, application Japan, Oct. 20, 1981, 56-167635
Int. Cl.⁴ H03K *5/00*
U.S. Cl. 328—26 **16 Claims**



1. A full-wave rectifier, comprising:
an input terminal;
a reference terminal held at a reference voltage;
a voltage terminal held at a voltage which is higher in absolute value than said reference voltage;
an amplifier having an inverting input connected to said reference terminal, a non-inverting input and an output;
a first resistor inserted between said input terminal and said non-inverting input of said amplifier;
a transistor having a base coupled to said output of said amplifier, and also having an emitter coupled to said voltage terminal and a collector;
a second resistor having one end coupled to said non-inverting input of said amplifier and the other end coupled to said collector of said transistor; and
an output terminal coupled to said other end of said second resistor.

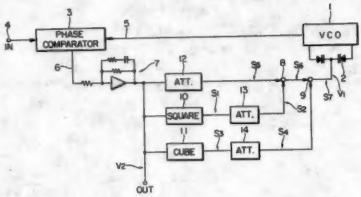
4,564,815

FM DEMODULATOR PLL WITH COMPENSATION FOR NONLINEAR VARACTOR CHARACTERISTICS

Michinori Naito, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1984, Ser. No. 580,160
Claims priority, application Japan, Feb. 28, 1983, 58-30828
Int. Cl.⁴ H03D *3/18, 3/00;* **H03L** *7/06;* **H04B** *1/16*
U.S. Cl. 329—50 **5 Claims**

1. An FM demodulator phase locked loop (PLL) comprising:
a voltage controlled oscillator (VCO) for generating a signal of an oscillating frequency depending upon a control voltage;
a phase comparator for comparing the phase and the frequency of an input FM signal with the VCO frequency signal and generating an error signal which is related to the phase and the frequency difference between the compared signals;
a low-pass filter for attenuating the high frequency components of the error signal at the output of the phase comparator;
a circuit for producing harmonic distortion components from the output signal from the low-pass filter; and



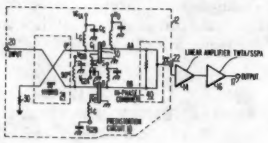
a circuit for combining the produced harmonic distortion components with the output signal of the low-pass filter so as to obtain non-distorted FM demodulated signal.

4,564,816

PREDISTORTION CIRCUIT

Mahesh Kumar, Dayton, and James C. Whartenby, Trenton, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed May 9, 1984, Ser. No. 608,415
Int. Cl.⁴ H03F *1/32*
U.S. Cl. 330—149 **11 Claims**

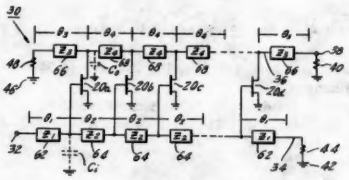


1. A predistortion circuit for predistorting a signal applied to a following power amplifier exhibiting phase and amplitude nonlinearities as a function of input power, said circuit comprising in combination:
an input terminal coupled to receive a signal to be amplified and an output terminal coupled to the input of said power amplifier;
means for power dividing a signal applied to the circuit input terminal and for providing a 90° phase shift of one divided signal relative to the other;
first and second active nonlinear means each adapted for receiving an input signal from a different one of the outputs of said power divider and each adapted for producing an output signal; and
means coupled to receive the output signals from the nonlinear means for combining in phase the signals produced by the active nonlinear means;
said active nonlinear means each adapted for receiving a bias voltage for controlling the amount of distortion produced by the predistortion circuit whereby the predistortion circuit predistorts the signal in a manner complementary to the distortion produced by the following power amplifier.

4,564,817
MONOLITHIC IMPEDANCE MATCHED CASCADE AMPLIFIER

Russell A. Gilson, Ocean, and Thomas F. Burke, Toms River, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 1, 1984, Ser. No. 616,091
Int. Cl.[4] H03F *3/60*
U.S. Cl. 330—286 8 Claims



1. A monolithic amplifier comprising:

a semiconductor substrate having an upper surface and a conductive base layer;

an integrated amplifier circuit disposed along the upper surface of the substrate, the amplifier circuit including input means for receiving a signal to be amplified from a signal source at one end, a plurality of successive amplifying stages including input and output stages at opposite ends for amplifying the signal received, and output means for providing the amplified signal to a load at the opposite end, each amplifier stage including a field effect transistor having a respective source, drain and gate on the surface of the substrate, and an underlying channel below said respective source, drain and gate, said gate controlling the conductivity of the respective channel between said source and drain, the respective gate being the input element of each stage connected to the input means, and the respective drain being the output element connected to the output means, said input and output means including a pair of spaced linear parallel conductive strips along opposite sides of said upper surface providing a pair of traveling wave input and output transmission lines having transverse connections to respective gates and drains of each successive stage;

an input terminating impedance means connected between the end of said input transmission line opposite said signal source and said conductive base layer; and

an output terminating impedance means connected between the end of said output transmission line opposite said load and said conductive base layer, said input and output terminating impedance means being matched to the respective characteristic impedance of the input and output transmission lines to prevent reflections.

4,564,818
TRANSIMPEDANCE AMPLIFIER HAVING AN IMPROVED GAIN/BANDWIDTH PRODUCT

Timothy R. Jones, Phoenix, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Aug. 24, 1984, Ser. No. 644,087
Int. Cl.[4] H03F *3/68*
U.S. Cl. 330—311 3 Claims

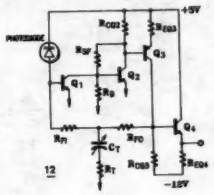
1. An improved transimpedance amplifier for changing an input signal to an output signal comprising:

input, intermediate and output current switching devices having a respective control electrode and first and second current carrying electrodes thereof;

a current generating device for providing said input signal to said transimpedance amplifier, said current generating device having first and second leads thereof respective coupled to a supply voltage terminal and said control electrode of said input current switching device;

first direct current feedback means coupling said first current carrying electrodes of said intermediate and input current switching devices having their respective second current carrying electrodes coupled to a reference voltage terminal, said first current carrying electrode of said input current switching device being connected to said control electrode of said intermediate current switching device;

second direct current feedback means coupling said first current carrying electrode of said output current switching device to said control electrode of said input current switching device, said second current carrying electrode of said output current switching device being coupled to



said supply voltage terminal and said control electrode thereof being connected to said first current carrying electrode of said intermediate switching device whereby said output signal may be taken at said first current carrying electrode of said output current switching device; and

an additional current switching device having a control electrode and first and second current carrying electrodes thereof, said control electrode thereof being connected to said first current carrying electrode of said output current switching device and said first current carrying electrode thereof being coupled to said supply voltage terminal whereby said output signal may be taken at said second current carrying electrode of said additional current switching device.

4,564,819
PHASE DETECTING APPARATUS

Syunichi Hirose, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 20, 1984, Ser. No. 673,340
Claims priority, application Japan, Nov. 25, 1983, 58-221650
Int. Cl.[4] H03L *7/06;* H03B *27/00;* H02H *7/125;* H02M *7/155, 7/04*
U.S. Cl. 331—2 15 Claims

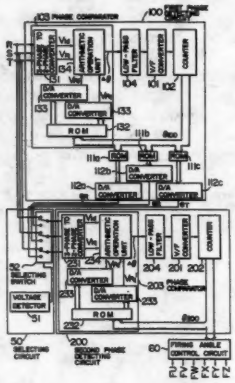
1. A phase detecting apparatus for detecting a phase of an AC voltage, comprising:

a first circuit comprising a phase-locked loop, receiving said AC voltage under detection, and producing an AC voltage signal which is in phase with said AC voltage under detection except until expiration of the response time of said phase-locked loop after any abrupt change in the phase of said AC voltage under detection;

a second circuit comprising a phase-locked loop having a response time which is shorter than the response time of the phase-locked loop of said first circuit; and

selecting means normally applying said AC voltage signal produced by said first circuit to said second circuit, and applying said AC voltage under detection or an AC voltage signal obtained by phase-number conversion from said AC voltage under detection to said second circuit until a

predetermined time has expired after rising of said AC voltage under detection to a predetermined level,



said second circuit producing a digital signal indicative of the phase of said AC voltage under detection.

4,564,820

BLOCKING OSCILLATOR CONVERTER WITH CONTROLLING LOGIC SYSTEM

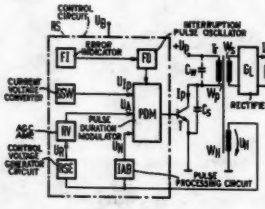
Günther Peruth, and Michael Lenz, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 24, 1984, Ser. No. 653,541

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1983, 3340138

Int. Cl.[4] H02M *3/335;* **H02H** *7/122*

U.S. Cl. 331—62 **9 Claims**



1. A blocking oscillator converter with controlling logic system for supplying an electrical apparatus, comprising:

a transformer whose primary winding is connected to a d.c. source and in series with a control path of a switching transistor;

a secondary winding of the transformer for connection to the electrical apparatus;

a control electrode of the switching transistor being controlled by an output of a switching control circuit;

said switching control circuit having modulation means for controlling the switching transistor;

an oscillator means emitting in its active state periodic interruption pulses to the modulation means, said modulation means blocking normal control of the switching transistor through each of said periodic interruption pulses;

said oscillator means identifying a potential danger to the converter through an input it receives related to operating parameters of the converter; and

said oscillator means in the case of normal behavior of said parameters not influencing the switching transistor, and given an active state in which the potential danger is identified, the interruption pulses emitted by the oscillator to the modulation means, as well as a frequency of said interruption pulses, are matched to a time behavior of the control circuit in such a fashion that after each interruption pulse a reactivation of switching transistor control by the control circuit occurs in accordance with normal control circuit operation.

4,564,821

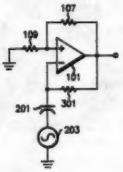
OFFSET CANCELLING AC LEVEL DETECTOR USING AN OSCILLATOR

Elwood C. Reichart, Chicago, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 1, 1984, Ser. No. 655,796

Int. Cl.[4] G01R *19/165;* **H03K** *3/023*

U.S. Cl. 331—74 **12 Claims**



9. A method of detecting a small-signal alternating current (AC) signal comprising the steps of:

generating an output signal having a first frequency;

accepting the AC signal having a frequency other than said first frequency of said output signal;

changing said output signal to a second frequency when the AC signal has a magnitude greater than a predetermined magnitude; and

detecting said output signal frequency change, thereby indicating presence of the AC signal greater than said predetermined magnitude.

4,564,822

TV TUNER OSCILLATOR WITH FEEDBACK FOR MORE LOW FREQUENCY POWER

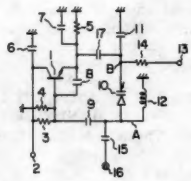
Takeshi Saitoh, Tokyo, and Hiroshi Hatashita, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 13, 1983, Ser. No. 541,440

Claims priority, application Japan, Oct. 13, 1982, 57-178403

Int. Cl.[4] H03B *5/12;* **H03C** *3/20;* **H03H** *5/12;* **H03J** *3/20*

U.S. Cl. 331—117 R **3 Claims**



1. An oscillator circuit for use in a local oscillator of a tuner, which is responsive to a tuning voltage to change its oscillation frequency, said oscillator circuit comprising:

a transistor;

a first capacitor connected between the emitter of the transistor and a common potential;

a second capacitor connected between the base and emitter of the transistor;

a tank circuit including a tuning diode, a coil and a third capacitor, whith the third capacitor and the coil connected to the common potential and with the tuning diode connected in series between the third capacitor and the coil;

a fourth capacitor connected between a junction of said tuning diode and coil and the base of said transistor; and

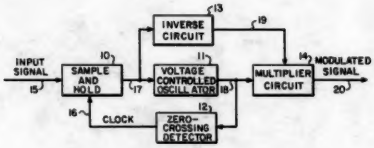
a fifth capacitor connected between a junction of said tuning diode and said third capacitor and the emitter of said transistor.

4,564,823

FRACTIONAL-CYCLE TIME/AMPLITUDE MODULATION

John P. Stahler, San Diego, Calif., assignor to Robot Research, Inc., San Diego, Calif.

Filed Sep. 24, 1984, Ser. No. 653,150
Int. Cl.[4] H03C *5/00;* **H03D** *5/00*
U.S. Cl. 332—17 **20 Claims**



1. A modulation system wherein a carrier signal is modulated by an input signal having a variable amplitude, comprising

means for sampling the amplitude of the input signal every predetermined fractional cycle of the modulated signal; and

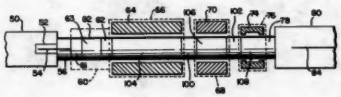
means for modulating the carrier signal in response to the sampled amplitude of the input signal to provide a modulated signal of which each said predetermined fractional cycle has an amplitude and a duration that are inversely proportional to each other and related to the sampled amplitude of the input signal.

4,564,824

ADJUSTABLE-PHASE-POWER DIVIDER APPARATUS

Charles R. Boyd, Jr., Arroyo Grande, Calif., assignor to Microwave Applications Group, Santa Maria, Calif.

Filed Mar. 30, 1984, Ser. No. 595,437
Int. Cl.[4] H01P *5/12, 1/17*
U.S. Cl. 333—137 **21 Claims**



1. A waveguide transmission line adjustable-phase power divider comprising:

(a) a first quarter-wave plate;

(b) a variable phase section coupled to said first quarter-wave plate;

(c) a second rotatable quarter-wave plate coupled to said variable phase section; and

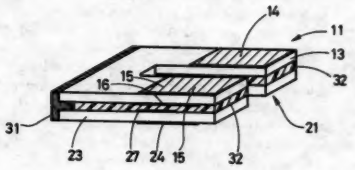
(d) a septum polarizer coupled to said second rotatable quarter-wave plate.

4,564,825

PIEZOELECTRIC FILTER

Hiroyuki Takahashi, Taksoka, and Takashi Yamamoto, Ishikawa, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jul. 25, 1984, Ser. No. 634,128
Claims priority, application Japan, Aug. 15, 1983, 58-148968
Int. Cl.[4] H03H *9/56, 9/58*
U.S. Cl. 333—191 **6 Claims**



1. A piezoelectric filter of the energy-trapped type utilizing thickness shear vibration mode, comprising:

(A) first and second resonator units, each resonator unit including:

(1) a piezoelectric plate having a slit formed therein;

(2) a pair of front electrodes disposed on a front surface of the piezoelectric plate with the slit being located between the front electrodes; and

(3) a pair of back electrodes disposed at the back surface of the piezoelectric plate so as to at least partially overlap the pair of front electrodes; the pair of the front electrodes of the second resonator unit being electrically connected;

(B) means for positioning and spacing the first and second resonator units relative to one another so that the back electrodes of the first resonator unit face the back electrodes of the second resonator unit and such that the resonator units are at least partially mechanically coupled to one another;

(C) a terminal disposed on at least one of the piezoelectric plates, the terminal being electrically connected to the back electrodes of the first and second resonator units; and

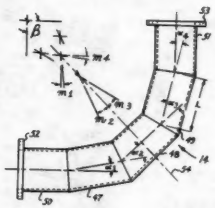
(D) the pair of front electrodes of the first resonator unit defining an input electrode and an output electrode, respectively.

4,564,826

MULTIPLE MITERED CIRCULAR WAVEGUIDE BEND

Hans J. Wiesenfarth, Montclair, and Geza Dienes, Claremont, both of Calif., assignors to Andrew Corporation, Chicago, Ill.

Filed Apr. 6, 1984, Ser. No. 597,480
Int. Cl.[4] H01P *1/02*
U.S. Cl. 333—249 **8 Claims**



4. An antenna feed systems of the kind for coupling electromagnetic energy at a predetermined guide wavelength from a transmitter at substantially ground level to an antenna substantially above ground level and mounted on a tower horizontally displaced from the transmitter, said antenna feed system comprising a substantially horizontal first waveguide extending

from the transmitter to the base of the tower, a substantially vertical second circular waveguide depending from the antenna to the base of the tower, and a waveguide bend joining the first and second waveguides at the base of the tower,

wherein the improvement comprises, said first waveguide is a circular waveguide, said waveguide bend is a multiple mitered circular waveguide bend for providing a low VSWR connection between the first and second circular waveguides, said first and second circular waveguides each having a respective longitudinal axis, said axes intersecting at approximately a right angle, said waveguide bend comprising an odd number n of mitered circular waveguide sections, said odd number n being at least three, each of said mitered sections having a length that is an odd multiple of a quarter of said guide wavelength and each mitered section being mitered at both of its ends, a first one of said mitered sections having a first one of its ends connected to an end of said first circular waveguide and said first mitered section having a longitudinal axis intersecting the longitudinal axis of said first circular waveguide at an angle of α_1, for each integer i between one and n the ith one of said mitered sections having a first one of its ends connected to the second one of the ends of the $(i-1)$th mitered section and said ith one of said mitered sections having a longitudinal axis intersecting the longitudinal axis of the $(i-1)$th mitered section at an angle α_i, the nth one of said mitered sections having a first one of its ends connected to the second one of the ends of the $(n-1)$th mitered section and said nth one of said mitered sections having a longitudinal axis intersecting the longitudinal axis of the $(n-1)$th mitered section at an angle α_n, said second circular waveguide having an end connected to the second end of the nth mitered section and the longitudinal axis of said second circular waveguide intersecting the longitudinal axis of said nth mitered section at an angle α_{n+1}, and wherein the respective ratios $\alpha_2/\alpha_1, \ldots, \alpha_{(i+1)}/\alpha_i, \ldots, \alpha_{(n+1)}/\alpha_n$ of the angles $\alpha_1, \ldots, \alpha_i, \ldots, \alpha_{(n+1)}$ are approximately equal to the respective ratios $C_2/C_1, \ldots, C_{(i+1)}/C_{(i)}, \ldots, C_{(n+1)}/C_n$ of the binomial coefficients $C_1, \ldots, C_i \ldots, C_{(n+1)}$ of the expansion of $(a+b)^n$, where a and b are algebraic variables, so that $C_1=1$, $C_2=n$, $C_3=n(n-1)/2, \ldots, C_n=n$ and $C_{(n+1)}=1$.

4,564,827

PROGRAMMABLE CONTROL FOR A SWITCHING CHRONOMETER

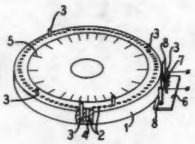
Gerd Kammerer, St. Georgen, and Friedrich X. Thoma, Haslach i. K., both of Fed. Rep. of Germany, assignors to Dieter Graesslin Feinwerktechnik, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,095

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1983, 3310935

Int. Cl.[4] H01H *51/34*

U.S. Cl. 335—92 **12 Claims**



1. A switching timer programmable control means, comprising:

a movable program carrier;

a magnetic field sensor comprising a ferromagnetically alloyed Wiegand effect wire disposed on the program carrier;

a coil in proximity of the program carrier and the carrier being movable so as to permit the wire to be moved to a proximity of the coil during timer operation;

a permanent magnet adjacent the coil whose magnetic field influences a core polarity of the wire when it is in a proximity thereof such that the coil emits voltage pulses given such polarity changes in the wire for control of an electrical switch; and

means on the program carrier for permitting free movement of the wire to a desired program position in accordance with a desired switching program.

4,564,828

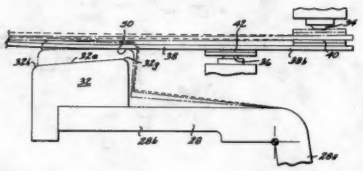
ELECTROMAGNETIC RELAY

Ronnie D. Lowe, Anaheim, Calif., assignor to American Zettler, Inc., Irvine, Calif.

Filed May 14, 1984, Ser. No. 609,613

Int. Cl.[4] H01H *67/02*

U.S. Cl. 335—128 **12 Claims**



1. In an electromagnetic relay having an electromagnetic motor, an armature moveable in response to energization and deenergization of said motor, and contact means including a stationary contact and a moveable contact carried by a moveable contact arm, the combination of

a force-transmitting member fixed relative to said armature of movement therewith relative to said contact arm,

said force-transmitting member comprising means to provide at least two sequentially operable mechanical advantages in urging said moveable contact into engagement with said stationary contact.

4,564,829

RAILWAY SIGNALING RELAY

Cornelius J. Illenberg; Ronald W. Dinger, both of Rochester; David A. Kunde, Pittsford, and Anthony V. Lucarelli, Rochester, all of N.Y., assignors to General Signal Corp., Rochester, N.Y.

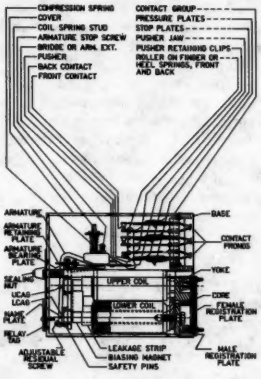
Filed Oct. 28, 1983, Ser. No. 546,244

Int. Cl.[4] H01H *51/08*

U.S. Cl. 335—135 **10 Claims**

1. In a railway signalling relay having contacts provided by a plurality of contact springs some of which are moveable and others of which are front and back contacts, said front contacts being disposed between stop plates and pressure plates, said moveable contacts being connected to a pusher which is connected to an armature, a magnetic structure including at least one coil for said armature attracting said armature through an air gap when said relay in energized by current applied to said coil to raise said pusher and moveable contacts against downward spring and gravity bias, the improvement for providing said relay with high percentage release characteristics which comprises said stop plates of said front contacts being connected thereto to apply trapped pressure thereto when said

relay is deenergized for biasing said front contacts in a downward direction, said stop plates of said back contacts being



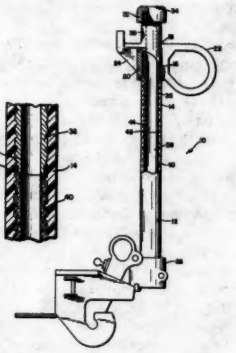
connected thereto to apply trapped pressure to bias said back contacts in an upward direction when said relay is energized.

4,564,830

WOUND-IN SLEEVE FUSE CUTOUT TUBE CONSTRUCTION

Dean C. Warner, Portville, and James R. Marek, Olean, both of N.Y., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Jul. 23, 1984, Ser. No. 633,627
Int. Cl.⁴ H01H *85/14*
U.S. Cl. 337—246 **8 Claims**



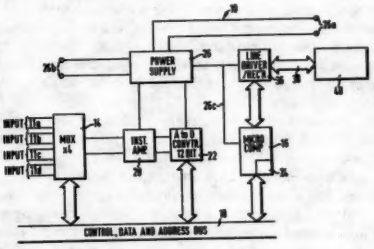
1. A fuse cutout tube construction, comprising:
an outer tubular covering component;
a bone fiber liner component disposed internally within said outer tubular covering component having a substantially continuous first spiral groove defined along generally the entire length of its external periphery;
a sleeve insert component disposed internally within said outer tubular covering component having a substantially continuous second spiral groove defined along generally the entire length of its external periphery;
a rabbet joint defined between said bone fiber liner and said sleeve insert components; and
said outer tubular covering component being contiguously formed about said bone fiber liner and sleeve insert components within said first and second spiral grooves in a fashion essentially minimizing plastic deformation and separation of the components during high and low fault interrupting conditions.

4,564,831

ANALOG TO DIGITAL CONVERTERS FOR CONVERTING A PLURALITY OF DIFFERENT INPUT SIGNALS

Desmond Wheable, and Michael J. Attwood, both of Basingstoke, England, assignors to Transamerica Delaval Inc., Lawrenceville, N.J.

Filed Jun. 16, 1983, Ser. No. 505,078
Claims priority, application United Kingdom, Jul. 2, 1982, 8219200
Int. Cl.⁴ H03K *13/17*
U.S. Cl. 340—347 AD **5 Claims**



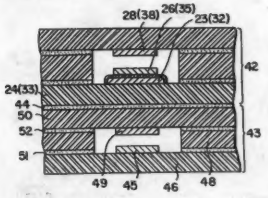
1. Analog to digital converter apparatus for converting analog input signals coupled to a plurality C of inputs to digital representations thereof, comprising a fast analog to digital converter having an input and an output, means arranged sequentially to couple the C inputs to the analog to digital converter at a rate such that each input is coupled to the converter N times in a period M of an a.c. series mode signal and at equal time intervals of M/N, averaging means having an input coupled to the output of the analog to digital converter for averaging the N digital values of each input to provide at the end of a conversion period C digital signals representative of the mean magnitude of the C input signals respectively during a period M.

4,564,832

MEMBRANE KEYBOARD HAVING KEY CLOSURE RETENTION

Kazuo Inoue, Toride, Japan, assignor to Nippon Mektron, Ltd., Japan

Filed Mar. 31, 1983, Ser. No. 480,915
Claims priority, application Japan, Mar. 31, 1982, 57-53157
Int. Cl.⁴ G08C *9/00*
U.S. Cl. 340—365 R **13 Claims**



1. A keyboard comprising:
a first circuit sheet;
at least one first movable contact element on said first circuit sheet, said first contact element of said first sheet being electroconductive and having magnetic properties;
a second circuit sheet, said second circuit sheet having at

least one second contact element on a first side of said second circuit sheet facing said first circuit sheet, said second contact element being electroconductive and having magnetic properties;

said first and second contact elements being aligned and normally being electrically disconnected, and being adapted to be brought into electrical contact by movement of said first contact element toward said second contact element;

electrical circuit means on said first side of said second circuit sheet and defining a coil for the generation of a magnetic field in alignment with said first and second contact elements to retain said first and second contact elements in physical and electrical contact;

insulation means over said electrical circuit means, said second contact element being supported on said insulation means;

retention termination means being associated with said circuit means defining a coil for terminating the generation of the magnetic field; and

membrane switch means attached to said second circuit sheet on said second side thereof, said membrance switch means including;

a first sub-switch sheet adhesively fixed to the second side of said second circuit sheet;

said first sub-switch sheet having at least one electrically conductive movable contact element thereon;

a second sub-switch sheet having at least one electrically conductive fixed contact element thereon corresponding to and aligned with the movable contact element on said first sub-switch and with said circuit means defining a coil; and

a spacer sheet separating and adhesively bonded to said first and second sub-switch sheets.

4,564,833

DOZING WARNING SYSTEM FOR A VEHICLE

Yasutoshi Seko, Yokohama, and Takayuki Yanagishima, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

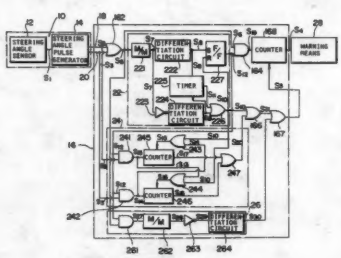
PCT No. PCT/JP81/00263, § 371 Date May 7, 1982, § 102(e) Date May 7, 1982, PCT Pub. No. WO82/01167, PCT Pub. Date Apr. 15, 1982

PCT Filed Oct. 5, 1981, Ser. No. 377,206

Claims priority, application Japan, Oct. 6, 1980, 55-139660

Int. Cl.⁴ G08B *21/00*

U.S. Cl. 340—576 **15 Claims**



1. A doze warning system for an automotive vehicle comprising:

a steering angle detecting means for producing steering angle pulses at every predetermined angular variation of the steering, said steering angle pulses providing an indication of direction of the steering angle variation;

a dozing detecting circuit including

a first reset circuit means for counting up the steering angle pulses produced by the steering operation in the same direction and producing a curve signal when the counted value within a predetermined first period of time, measured from a time point of receiving the first steering angle pulse, reaches a first value;

a second reset circuit means for producing a pulse interval signal when an interval between occurrences of the steering angle pulses is longer than a predetermined second period of time;

a counter section means for counting said steering angle pulses and for producing a warning signal when a count of the steering angle pulses within the predetermined first period, reaches a second value, said counter section means resetting the count in response to said curve signal or said pulse interval signal; and

a warning section for producing a warning when the warning signal is inputted.

4,564,834

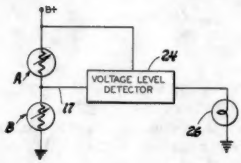
THERMAL LIQUID LEVEL DETECTOR

Robert E. Steele, Cortland, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 11, 1983, Ser. No. 540,654

Int. Cl.⁴ G01F *23/00*; H01H *35/18*

U.S. Cl. 340—622 **6 Claims**



1. A liquid level detector for monitoring the presence of liquid in a container at a set level when the detector is energized comprising,

first and second PTC resistors each of which are self-heating upon application of a current and having a switch point effecting a substantial resistance increase at a unique temperature above the maximum temperature of the liquid, at least the first of the PTC resistors being positioned at the said set level and the second being positioned at the set level or in the air above the liquid, the first PTC resistor having a heat loss rate in air that is less than that of the second, and a heat loss rate in liquid that is greater than that of the second, so that when heating current is applied to the resistors, one will reach the switch point before the other depending on the liquid level, and

a circuit including the PTC resistors in series and a voltage source for applying a current to the resistors and providing a voltage signal indicative of liquid level whereby the voltage signal assumes a high or low value depending on which of the resistors first switches to a high resistance.

4,564,835

FIELD-COUPLED POINTING DEVICE

Satish K. Dhawan, 36 Anita St., New Haven, Conn. 06511

Filed Dec. 13, 1982, Ser. No. 449,238

Int. Cl.⁴ G09G *3/00*

U.S. Cl. 340—710 **22 Claims**

1. A pointing device comprising:

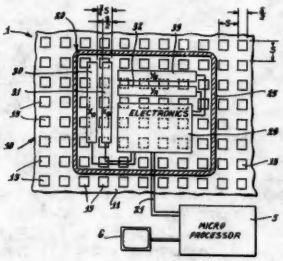
(A) a mouse table having a substantially flat base with a plurality of electrical field-sensitive pixels deployed thereon in a regular, repetitive pattern having an x-axis and a y-axis, including non-pixel areas separating pixels in the x-axis and non-pixel areas separating pixels in the y-axis;

(B) a mouse including a housing adapted for movement on the mouse tablet, the housing having mounted therein

(1) first and second x-axis coupling elements, each of the

x-axis coupling elements being adapted for establishing electrical field coupling with the pixels which is position dependent with respect to pixels in the x-axis, the first and second x-axis coupling elements being spaced apart in the x-axis such that field coupling established by the first x-axis coupling element is out-of-phase with field coupling established by the second x-axis coupling element, and

(2) first and second y-axis coupling elements, each of the y-axis coupling elements being adapted for establishing electrical field coupling with the pixels which is position dependent with respect to pixels in the y-axis, the first and second y-axis coupling elements being spaced



apart in the y-axis such that field coupling established by the first y-axis coupling element is out-of-phase with the field coupling established by the second y-axis coupling element;

(C) circuit means connected with said coupling elements for causing said coupling elements to establish electrical field coupling with said pixels, said circuit means having operating parameters which vary according to the position of the coupling elements with respect to the pixels; and

(D) means detecting variations in the operating parameters of the circuit means and means for determining mouse motion and the direction of mouse motion on the mouse tablet based on said variations in said operating parameters.

4,564,836

MINIATURE SHUTTER TYPE DISPLAY DEVICE WITH MULTIPLEXING CAPABILITY

Raymond Vuilleumier, Fontainemelon, and Paul-Charles Weiss, Neuchatel, both of Switzerland, assignors to Centre Electronique Horloger S.A., Neuchatel, Switzerland

Filed Jun. 25, 1982, Ser. No. 392,073

Claims priority, application Switzerland, Jul. 2, 1981, 4360/81

Int. Cl.⁴ G09G *3/34*

U.S. Cl. 340—783 **17 Claims**

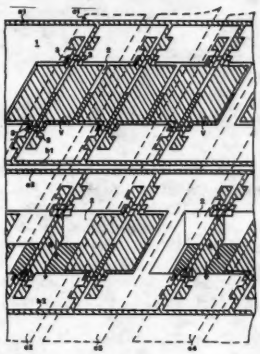
1. A miniature display device comprising a carrier having cavities therein and shutters which are fastened to the carrier by resilient attachment means at opposite edges of said shutters, said shutters closing said cavities in their rest condition and capable of rotating through a substantial angle under the effect of an electrical field to open the cavities; said device additionally comprising:

at least one pair of shutters per cavity, each shutter of a pair being fastened to said carrier by two resilient attachment means which are disposed on respective sides of the shutter and in alignment with the side adjacent to the other shutter of said pair;

first electrodes which are disposed on said shutters;

second electrodes which are disposed on a bottom of said cavity;

means for applying a control voltage between two said first and second electrodes to cause at least one pair of said shutters to rotate to an activated condition substantially parallel to each other and substantially perpendicular to the bottom of the corresponding cavity; and



means for subsequently applying a holding voltage between the electrodes of the said activated two shutters of each said pair of shutters for holding the said two shutters in the activated condition in the absence of said control voltage.

4,564,837

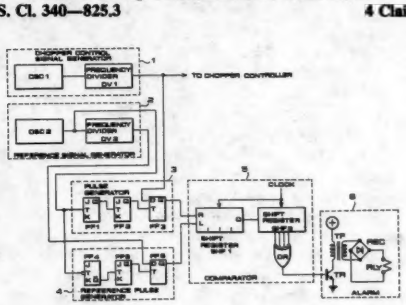
CIRCUIT FOR MONITORING THE FREQUENCY OF SIGNAL FOR CONTROLLING CHOPPERS OF ELECTRIC CARS

Toshiaki Awano, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 3, 1983, Ser. No. 455,127

Int. Cl.⁴ H04Q *9/00*; H03K *7/06*; G08B *21/00*

U.S. Cl. 340—825.3 **4 Claims**



1. A circuit for monitoring the frequency of signal for controlling choppers of electric cars, comprising:

means for generating a reference frequency signal which has a frequency which is an integer number of times that of said chopper control signal;

means for generating a compare pulse signal responsive to the logical product between said reference frequency signal and said chopper control signal;

means which divides the frequency of said reference frequency signal to generate a reference pulse signal of a nominal frequency for producing said chopper control signal;

means which compares the phase between said compare pulse signal and said reference pulse signal to produce an error signal of a predetermined logic level when the phase difference between the two pulse signals becomes greater than a predetermined value;

said comparator means comprising a first shift register having a plurality of stages which introduces one logic level

that is shifted in one direction responsive to said compare pulse signal, and which introduces another logic level that is shifted in another direction responsive to said reference pulse signal, and gate means which produces the error signal when the output of the shift register continuously remains in a predetermined logic level for a predetermined period of time; and

means for producing an alarm responsive to said error signal generated by said comparator means.

4,564,838

DATA COMMUNICATION NETWORK AND METHOD OF COMMUNICATION

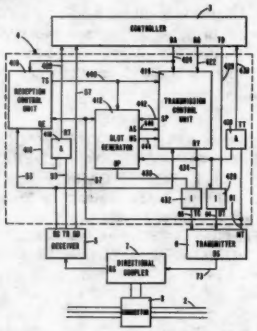
Gerardus F. Boulogne, Nieuwegein, and Bernardus P. J. van Berkel, Apeldoorn, both of Netherlands, assignors to NCR Corporation, Dayton, Ohio

Filed Oct. 27, 1982, Ser. No. 437,071

Claims priority, application United Kingdom, Mar. 29, 1982, 8209200

Int. Cl.[4] H04Q *00/00*

U.S. Cl. 340—825.5 **11 Claims**



1. A data communication network comprising:

a plurality of data stations;

a common data channel connecting said data stations;

each one of said data stations having a transmitter and a receiver, wherein each said data station includes channel contention means coupled to the associated said transmitter and receiver for initiating transmission request signals in a sequence of consecutive time periods in each of which a said data station either transmits or does not transmit a transmission request signal according to a predetermined code assigned to that said data station;

said channel contention means further including contention resolving means for determining during said sequence whether another one of said data stations is transmitting a said transmission request signal while a first one of said data stations is not transmitting such a said transmission request signal; and

said contention resolving means including means for aborting a contention for said common data channel by said first one of said data stations when said contention resolving means determines that any other one of said data stations is transmitting;

said channel contention means for each said data station including means for generating transmission request signals according to said predetermined code which is cyclic and unique to the associated said data station, and also including means for commencing a succeeding channel contention at a point in the associated cycle of said predetermined code determined by the point in said cycle at which a previous contention for said common data channel ceased.

4,564,839

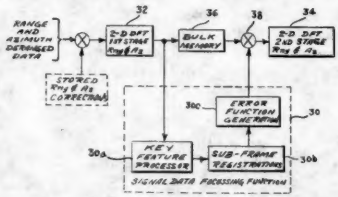
FEATURE REFERENCED ERROR CORRECTION APPARATUS

Norman F. Powell, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 14, 1982, Ser. No. 417,928

Int. Cl.[4] G01S *13/90*

U.S. Cl. 343—5 CM **4 Claims**



1. A feature referenced error correction apparatus comprising in combination:

a first and second stage processing means to process signal data from a synthetic aperture radar, said first stage processing means receiving said signal data from said synthetic aperture radar, said second stage processing means operatively connected to said first stage processing means to recevie the output signal therefrom, and

means for preprocessing said signal data from said first stage processing means, said signal data comprising multiple images of a given frame from said synthetic aperture, said multiple images establishing positional shift errors in said signal data, said preprocessing means operatively conected to the output of said first stage processing means to receive the output signal therefrom, said preprocessing means measuring the errors in said signal data from said first stage processing means, said preprocessing means providing an error correction signal in response to the measured error in said signal data, said preprocessing means applying said error correction signal to said second stage processing means.

4,564,840

RADIONAVIGATION SYSTEM HAVING MEANS FOR CONCEALING DISTANCE AND/OR BEARING INFORMATION CONVEYED THEREBY

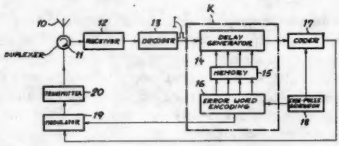
Jacques D. Brissé, Longchêe, Bullion, 78830 Bonnelles, and Jean-Pierre J. Chevalier, Saint Laurent la Gâtine, 78210 Nogent le Roi, both of France

Filed Feb. 13, 1978, Ser. No. 879,271

Claims priority, application France, Feb. 16, 1977, 77 04378

Int. Cl.[4] G01S *9/56, 13/74*

U.S. Cl. 343—6.5 LC **10 Claims**



1. In a radionavigation system wherein a ground station includes transmission means responsive to interrogation pulses from passing aircraft for emitting outgoing signals enabling evaluating means aboard said aircraft to derive positional information from the timing thereof,

the improvement wherein said ground station comprises error-generating means for introducing an artificial delay into the emission of said outgoing signals to falsify the positional information conveyed thereby, said transmis-

sion means receiving from said error-generating means a binary message representing the magnitude of said artificial delay in coded form for communication to on-board equipment of interrogating aircraft, the on-board equipment of privileged aircraft including error-eliminating means for extracting said magnitude from said binary message and controlling said evaluating means to correct the falsified positional information derived from said outgoing signals.

4,564,841

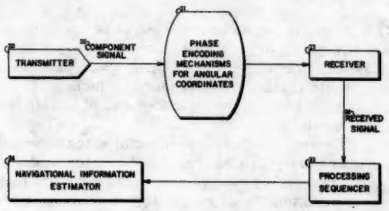
NAVIGATIONAL SYSTEMS USING PHASE ENCODED ANGULAR COORDINATES

Norman S. Neidell, 10497 Town & Country Way Suite 300, Houston, Tex. 77024

Continuation of Ser. No. 225,410, Jan. 15, 1981, abandoned, which is a continuation-in-part of Ser. No. 76,695, Sep. 18, 1979, Pat. No. 4,315,263, which is a continuation of Ser. No. 925,903, Jul. 19, 1978, which is a continuation-in-part of Ser. No. 691,674, Jun. 1, 1976, Pat. No. 4,114,153, which is a continuation of Ser. No. 483,202, Jul. 26, 1974, abandoned. This application Mar. 22, 1985, Ser. No. 715,052

Int. Cl.[4] G01S *1/08*

U.S. Cl. 343—386 **28 Claims**



1. A method of ascertaining navigational information for at least one mobile platform in terms of at least one angular coordinate by transmitting from at least one transmitter and receiving with at least one receiver at least one signal having a band of contiguous frequencies with no frequency missing over a defined frequency bandwidth, comprising the steps of:

changing the shape of the signal by encoding a distinction in phase over plural ones of the band of contiguous frequencies in accordance with at least one angular coordinate of navigational information, while propagating the signal from the transmitter to the receiver;

receiving the propagated signal,

measuring the phase of the received signal, and

decoding the angular coordinate from the encoded distinction in phase.

4,564,842

SINGLY FED CIRCULARLY POLARIZED MICROSTRIP ANTENNA

Yasuo Suzuki, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 28, 1984, Ser. No. 584,385

Claims priority, application Japan, Mar. 4, 1983, 58-35376

Int. Cl.[4] H01Q *1/38*

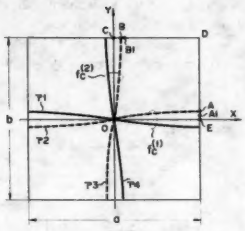
U.S. Cl. 343—700 MS **8 Claims**

1. A singly fed circularly polarized microstrip antenna comprising:

a dielectric substrate;

a conducting ground layer coated on one side of said dielectric substrate; and

a conducting patch radiator coated on the other side of said dielectric substrate, the radiator having a feed point (x_c, y_c) which is a solution of the following equation



$$\frac{\psi^{(\nu+1)}(x_c, y_c)}{\psi^{(\nu)}(x_c, y_c)} = \pm \frac{E_0^{(\nu)}(0, \omega_c) \cdot x}{E_0^{(\nu+1)}(0, \omega_c) \cdot y} \times \left\{ \omega_c C - \frac{1}{\omega_c L^{(\nu+1)}} \right\} \quad (+: RHCP,\ -: LHCP)$$

where

ν, $\nu+1$ represent two orthogonal modes contributing a circularly polarized wave;

$\psi^{(\nu)}$ represents an eigenfunction with respect to a ν-th mode determined by the dimensions of the radiator and which is a function with respect to the position (x, y);

$E_0^{(\nu)}(0, \omega_c)$ represents an electric field in a direction $\theta=0°$ with respect to the ν-th mode;

C represents a capacitance component of an equivalent circuit parameter for a microstrip antenna;

$L^{(\nu)}$ represents an inductance component of an equivalent circuit parameter for a microstrip antenna; and

ω_c is an exciting frequency which is a $(\mu+1)$-th solution of the following interative equation:

$$\omega_{\mu+1} = \sqrt{\frac{[\{(\omega^{(\nu)})^2 + (\omega^{(\nu+1)})^2\} - U^2(\omega_\mu)] \pm \sqrt{D(\omega_\mu)}}{2}}$$

where $D(\omega) = [\{\omega^{(\nu)} - \omega^{(\nu+1)}\}^2 - U^2(\omega)] \times [\{\omega^{(\nu)} + \omega^{(\nu+1)}\}^2 - U^2(\omega)]$,

$$U(\omega) = \frac{\sqrt{g^{(\nu)}(\omega) \cdot g^{(\nu+1)}(\omega)}}{C},$$

$g^{(\nu)}(\omega)$: a conductance component of an equivalent circuit parameter for a microstrip antenna, which is a function with respect to ω.

4,564,843

ANTENNA WITH P.I.N. DIODE SWITCHED TUNING INDUCTORS

Charles E. Cooper, "Shannon", The Green, Cookham Dean, Berkshire, United Kingdom

Filed Dec. 1, 1981, Ser. No. 326,426

Claims priority, application United Kingdom, Jun. 18, 1981, 8118835

Int. Cl.[4] H01Q *9/00*

U.S. Cl. 343—745 **8 Claims**

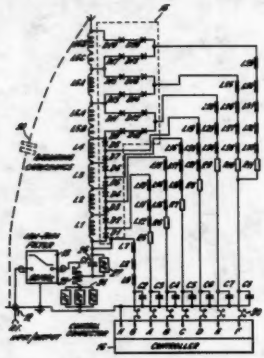
1. A radio antenna for frequency agile operation at a plurality of frequencies in a predetermined frequency band, comprising:

a capacitive radiating/receiving element;

a plurality of discrete tuning inductors coupled in series with said radiating/receiving element, said inductors having different inductances and having a short-circuiting switch,

each said short-circuiting switch including at least two P.I.N. diodes arranged for switchably short-circuiting at least a part of the respective inductor;

controller means coupled to said switches, for sequentially changing the tuning of the antenna by selectively applying



a forward bias to said diodes to be maintained conductive and a reverse bias to said diodes to be maintained non-conductive; and

at least one of said inductors being divided into a plurality of parts having separate switches for each of said parts.

4,564,844

COLLAPSIBLE BROADBAND DIRECTIONAL ANTENNA

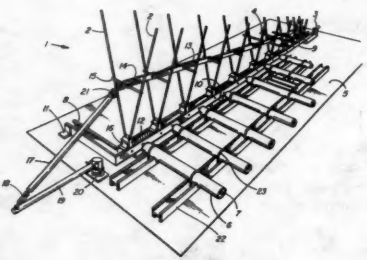
Cyril J. Bowering, 1481 Northdale St., Gloucester, Ontario, Canada K1B 4G6

Filed May 16, 1984, Ser. No. 610,809

Claims priority, application Canada, Sep. 1, 1983, 435855

Int. Cl.[4] H01Q *11/10, 1/08*

U.S. Cl. 343—881 **16 Claims**



1. A compact collapsible broadband directional monopole antenna adapted to be electrically connected to and positioned over a ground plane, comprising:

a plurality of radiating elements each element being electrically connected to a feed line and mounted on said feed line by means of a mounting assembly;

phasing means provided by a number of phasing lines electrically connected to said feed line; and

raising means being provided by a combination of joining means attached to individual radiating elements, said joining means being activatable by an antenna raiser attached at one end to said joining means and at the other end to a raising arm, said raising arm being pivotably attached to a base thereby to enable said elements to be raised sequentially with a relatively constant tension derived in response to a force applied to the raising arm.

4,564,845

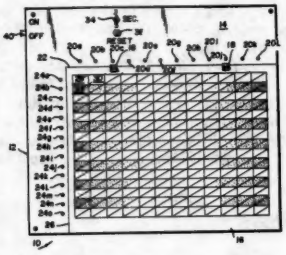
DEVICE TO AID IN THE MANUAL RECORDATION OF DATA

Rosemary A. Lambie, 528 Rossmore Rd., Richmond, Va. 23225

Filed Jun. 28, 1984, Ser. No. 625,625

Int. Cl.[4] G01D *9/00, 9/42*

U.S. Cl. 346—17 **10 Claims**



1. A device to aid an operator in the recordation of time-based data comprising:

a case body defining a surface upon which data indicia are scribable at plural predetermined locations;

timing means for generating a sequence of uniformly timed output signals; and

visual locating means operatively connected to said timing means and fixed to said case body to define said locations upon said surface, said visual locating means for receiving said uniformly timed output signals to visually identify one of said locations corresponding to a given time in response to said timing means generating a timed output signal indicative of said given time and for enabling an operator to visually locate said one location by virtue of said visual locating means so that data indicia for said given time is scribed at said one location,

said visual locating means comprising pairs of light-emitting elements corresponding to each of said locations, wherein said pairs of light-emitting elements are sequentially illuminated in response to receiving said uniformly timed output signals from said timing means, each said illiminated pair of light-emitting elements thereby visually identifying one of said locations corresponding to said given time.

4,564,846

DROP ON DEMAND DOT MATRIX PRINTING HEAD

Burton L. Siegal, Skokie, Ill., assignor to Kiwi Coders Corporation, Wheeling, Ill.

Filed Oct. 26, 1984, Ser. No. 665,030

Int. Cl.[4] G01D *15/18*

U.S. Cl. 346—75 **18 Claims**

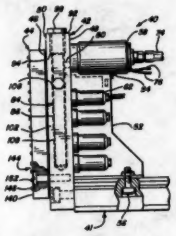
1. A drop-on-demand printer system printing characters in dot matrix format on a receptor moved in proximate printing relationship thereby, the system comprising:

A. a supply of ink, the ink being used to print individual dots of the dot matrix characters on said receptor;

B. controller means producing timed electrical signals that indicate formation of the dots of the dot matrix characters in timed relationship with movement of the receptor proximate the printer system;

C. a manifold plate formed of a rectangular solid body having four edge side surfaces and top and bottom side surfaces, the bottom side surface being adapted to face said receptor, the manifold plate carrying on its top side surface a plurality of dot valves arranged in four columns, each dot valve receiv-

ing one of said timed electrical signals, the manifold plate including two longitudinal bores therethrough aligned, respectively, below and between the first and second columns of said dot valves, and below and between the third and fourth columns of dot valves and further including a transverse bore fluid coupling together said two longitudinal bores, said longitudinal and transverse bores being sealed at the openings thereof to the edge side surfaces of the manifold plate, the manifold plate including normal bores fluid coupling each dot valve to its respectively aligned longitudinal bore, the manifold plate carrying on its top side surface an ink supply valve that is in fluid connection with the ink supply and the respective two longitudinal bores, the manifold plate including a plurality one for each dot valve, of spaced apart through outlet passages opening to said bottom side surface, each outlet passage opening being located in symmetrical relationship with another outlet passage opening located at 180 degrees of rotation in the plane of the bottom side surface, each outlet passage conducting ink from one dot valve to said bottom side surface;



D. a gasket of resilient material engaged against said manifold plate bottom side surface and having ways therethrough aligned with said manifold plate outlet passage openings;

E. a nozzle plate formed of a rectangular solid body having front and back side surfaces, the nozzle plate being fastened to said manifold plate with the gasket therebetween, the manifold plate bottom side surface and the nozzle plate back side surface being juxtaposed and the nozzle plate front side surface being adapted to face the receptor, the nozzle plate carrying a linear array of nozzles extending from said front side surface, the nozzle plate including a plurality, one for each nozzle, of nozzle passageways from said nozzles to said back side surface, and a plurality of grooves in said back side surface, each groove having one end in fluid connection with one nozzle passageway and another end aligned with one way of said gasket and one of said openings in said manifold plate bottom side surface, so that ink, passed by one of said dot valves in response to a timed electrical signal, passes through one outlet passageway to one groove, one nozzle passageway and one nozzle to the receptor.

4,564,847

IMAGE RECORDING ARRANGEMENT

Motohiko Hayashi, Ikoma; Toshiaki Karita, Sakurai; Matahira Kotani, Nara, and Hiromu Sasaki, Yamotokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 434,000, Oct. 13, 1982, Pat. No. 4,491,853.

This application May 9, 1984, Ser. No. 608,405

Claims priority, application Japan, Oct. 19, 1981, 56-167602; Oct. 19, 1981, 56-167603; Oct. 19, 1981, 56-167604; Oct. 19, 1981, 56-167605

Int. Cl.⁴ G01D *15/10*

U.S. Cl. 346—76 PH **10 Claims**

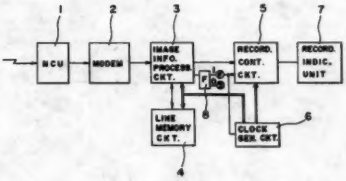
1. An image recording system comprising:

means for supplying information to be recorded;

recording head means for recording a predetermined number of bits along a record line, said recording head means including an array of colinearly aligned elements of a number one greater than needed to scan said predetermined number of bits, and an adjacent pair of elements at one end of said array having a single bit applied thereto;

means for feeding paper in a first direction aligned with said record line along a paper feed path; and

scan means for driving said recording head means transversely across said paper to scan said paper with each element of said recording head means in a single scan so as to scan a predetermined scan area of said paper having a predetermined scan width;



said means for feeding paper advancing said paper along said paper feed path a predetermined feed increment after each scan of said scan means to facilitate scanning of said paper by said recording head means in response to information supplied by said means for supplying said predetermined feed increment being slightly less than said predetermined scan width to ensure complete scanning of said paper the bit of said adjacent pair of elements at said one end overlapping the portion of an adjacent scan area.

4,564,848

PRINTER

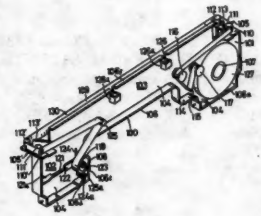
Tadayuki Kuzumi, Kawasaki, Japan, assignor to Kyocera Corporation, Japan

Filed Mar. 29, 1984, Ser. No. 594,677

Claims priority, application Japan, Mar. 30, 1983, 58-52467; Mar. 30, 1983, 58-52469

Int. Cl.⁴ H05D *1/100*

U.S. Cl. 346—76 PH **9 Claims**



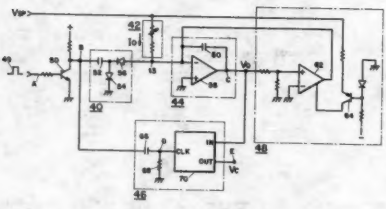
1. A printer which allows a plurality of heating elements disposed on a thermal head to selectively generate heat to thereby melt a transfer material coated on a printing tape and transfer said material onto a recording medium, said printer comprising: a printer body provided with a thermal head printing feed mechanism, a head restoration mechanism for restoring said head to the beginning of a print line, and a recording paper setting mechanism; a tape cassette comprising a supply reel for supplying said tape, a take-up reel for collecting said tape, and means for stretching said tape throughout the overall length of space provided for the movement of said head; means for mounting said cassette so that the axes of said reels are approximately orthogonal to the plane defined by said stretched portion of tape; and a tape take-up mechanism which winds up said tape so that the relative speed thereof to said head becomes substantially zero during the restoration process of said head.

4,564,849

COMPENSATION CIRCUIT FOR SYNCHRONIZING IMAGE MOTION WITH A MOVABLE RECORDING MEDIUM

Jerrold J. Rogers, Beaverton, and Judd L. Sirotiak, Tualatin, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 546,781, Oct. 27, 1983, abandoned.
This application Feb. 22, 1985, Ser. No. 704,899
Int. Cl.[4] G01D *9/42, 15/24*
U.S. Cl. 346—110 R 8 Claims



1. A compensation circuit for synchronizing image motion with a movable recording medium in a line scan type recording apparatus comprising:

a charge pump coupled to receive an electrical signal representative of an average velocity and short term velocity changes in a movable recording medium;

an integrator circuit coupled to the output of said charge pump; and

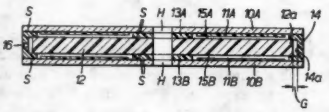
a current source interposed therebetween wherein said charge pump, in response to said electrical signal, draws a current from said integrator representative of said average velocity and short term velocity changes of said movable recording medium and wherein said current source produces a constant current that is coupled to said integrator and is representative of said average velocity of said movable recording medium such that an output electrical signal is produced by said integrator that is representative of short term velocity changes of said movable recording medium.

4,564,850

RADIATION-SENSITIVE RECORD DISC WITH IMPROVED INTERNAL STRUCTURE

Odawara Kazuharu, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 8, 1983, Ser. No. 550,028
Claims priority, application Japan, Nov. 10, 1982, 57-197103
Int. Cl.[4] G01D *15/34*
U.S. Cl. 346—137 7 Claims



1. A radiation-sensitive record disc comprising:

a first disc member;

a second disc member coaxially positioned adjacent said first disc member to reinforce said first disc member;

first spacing means between said first and second disc members for fixedly connecting said disc members together to form an air space between said disc members;

a recording layer formed on one surface of said first or second disc members in the air space between said disc members; and

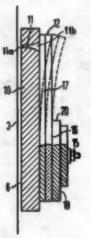
second spacing means radially displaced from said first spacing means and between said first and second disc members to form said air space, said second spacing means slidably contacting at least one of said first and second disc members for enabling said disc members to move relative to each other in a radial direction in response to expansion or contraction of at least one of said disc members.

4,564,851

RECORDING DEVICE FUNCTIONING WITH FLUID DROPLETS

Kenth Nilsson, Akersberga, and Jan Bolmgren, Vaellingby, both of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 8, 1984, Ser. No. 578,088
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1983, 3306101
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—140 R 14 Claims



1. In a recording device functioning with fluid droplets for punctiform recording of analog curves of alphanumerical characters as well as images on a recording medium, said device having nozzles with intake openings and discharge openings disposed in a row for writing the individual points, a piezoelectric transducer for each intake opening, clamp means for positioning a transducer in front of each intake opening of the nozzle, each transducer having means for applying electrical voltage thereto so that when the electric voltage changes on the transducer, a writing fluid is ejected from the nozzle onto a recording medium disposed in front of the discharge openings of the nozzles, each of the individual transducers being formed by teeth of a comb-like piezoplate which is a bilaminar plate of a piezoceramic layer and a carrier layer, the improvements comprising the piezoceramic layer being provided with a reinforcing layer in the area of a comb spine shared by all of the teeth on a surface of the spine opposite the carrier layer, said reinforcing layer having an edge defining a length of an oscillatory part of each transducer.

4,564,852

PENS FOR LOW TORQUE CHART RECORDERS

Joseph Pelensky, Philadelphia, Pa.; James R. Hubbard, Moorestown, and John J. Scanlon, Mount Laurel, both of N.J., assignors to Graphic Controls Corporation, Buffalo, N.Y.

Continuation of Ser. No. 555,341, Nov. 28, 1983. This application Aug. 16, 1985, Ser. No. 767,053
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—140 R 29 Claims

1. A marker comprising:

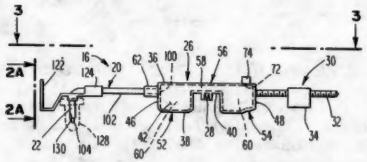
a bifurcated body having first and second ink reservoirs and a connector segment forming at least one ink passage between said reservoirs;

ink retaining material in each of said reservoirs;

means extending through said connector segment for conveying ink between said reservoirs and for maintaining equal levels of ink in said reservoirs;

a stylus tube extending in a first direction from a first end of said body for transmitting ink to a tip thereof; and

pivot means extending across said connector segment and



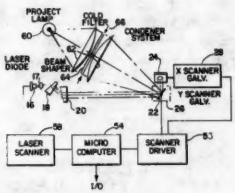
beyond the lateral sides thereof for engaging an associated pivot support on a yoke support outward of said lateral sides, said pivot means bisecting a centrally disposed line between said reservoirs.

4,564,853

ELECTRONIC IMAGE SENSING AND PRINTING APPARATUS

Richard G. Egan, Dover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 8, 1985, Ser. No. 699,564
Int. Cl.⁴ G01D *9/42*
U.S. Cl. 346—160 **13 Claims**



1. An electronic image printer of the type adapted to expose a photosensitive material with light derived from a source of incoherent light to print an image on the photosensitive material of a selected subject comprising:

laser means for providing a beam of coherent light;

means for modulating said coherent light beam in response to an electronic signal corresponding to the image of the subject selected for printing;

a laser addressed liquid crystal light valve;

light scanning means including at least one light reflective scanning surface for sweeping said modulated coherent light beam over the area of said liquid crystal light valve so as to address said liquid crystal light valve;

first optical means for focusing the light emanating from the source of incoherent light onto said light reflective scanning surface for projection by said light scanning means to uniformly illuminate the entire area of said liquid crystal light valve previously addressed by said beam of coherent light; and

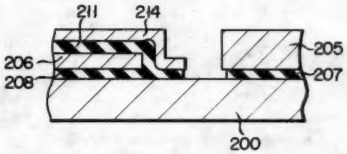
second optical means for directing the incoherent light transmitted through said liquid crystal light valve to expose the photosensitive material to the image of the subject selected for printing.

4,564,854

COMBINED MOS/MEMORY TRANSISTOR STRUCTURE

Mitsugi Ogura, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 199,925, Oct. 23, 1980, abandoned.
This application Dec. 15, 1983, Ser. No. 562,033
Claims priority, application Japan, Oct. 29, 1979, 54-138655
Int. Cl.⁴ H01L *29/78, 27/04;* G11C *11/40*
U.S. Cl. 357—23.6 **4 Claims**



1. A semiconductor device which comprises:

a semiconductor substrate in which at least three elements are formed;

a first conductive substantially flat layer formed on the substrate to constitute a first element with a first insulation layer interposed between said first conductive layer and the substrate, said first conductive layer having a substantially uniform thickness and a side surface;

a second conductive substantially flat layer formed on the substrate to constitute a second element with a second insulation layer interposed between said second conductive layer and the substrate, said second conductive layer being thinner than said first conductive layer and having a side surface spaced from the side surface of said first conductive layer; and

a third conductive layer deposited over the second conductive layer to constitute a third element in a state superposed on said second conductive layer with a third insulation layer interposed between said second and third conductive layers, said third conductive layer having a side surface spaced from the side surface of said first conductive layer, the total thickness of said first insulation layer and said first conductive layer being substantially equal to the total thickness of said second insulation layer, said second conductive layer, said third insulation layer and said third conductive layer to position the top surfaces of said first and third conductive layers in the same horizontal plane, and with the side surface of said first conductive layer spaced from the side surfaces of said second and third conductive layers to provide a continuous vertically extending opening between said superposed second and third conductive layers and said first conductive layer.

4,564,855

HIGH CURRENT PNP TRANSISTOR FORMING PART OF AN INTEGRATED MONOLITHIC CIRCUIT

Francois Van Zanten, Paris, France, assignor to Thomson CSF, Paris, France

Filed Mar. 8, 1983, Ser. No. 473,672
Claims priority, application France, Mar. 12, 1982, 82 04216
Int. Cl.⁴ H01L *27/04*
U.S. Cl. 357—46 **4 Claims**

1. A semiconductor structure comprising:

(a) an N^+ substrate;

(b) a P layer covering said N^+ substrate;

(c) an N^- layer covering said P layer;

(d) means for defining a central zone and an annular zone, said defining means including non-intersecting innermost and outermost P^+ isolating walls passing through said N^- layer and at least partially penetrating into said P layer, said central zone being bounded by said innermost

P^+ isolating wall, said annular zone being disposed between said innermost and outermost P^+ isolating walls;

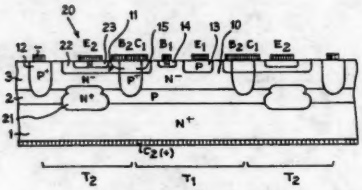
(e) a PNP transistor being disposed in said central zone and having:

(i) a P emitter zone formed in said central zone,

(ii) an N^+ base zone formed in said central zone, and

(iii) said innermost P^+ isolating wall providing a collector for said PNP transistor

(f) an NPN transistor controlled by said PNP transistor, disposed in said annular zone and including:



(i) a P base zone contacting said innermost P^+ isolating wall,

(ii) an N emitter zone disposed on a portion of said P base zone, and

(iii) an N^+ connecting zone contacting both said N^+ substrate and said N^- layer, said N^+ connecting zone and said N^+ substrate providing a collector for said NPN transistor, said N^+ connecting zone being annular in structure to cause a central portion of said P layer to be isolated from portions of said P layer outside said annular N^+ connecting zone.

4,564,856

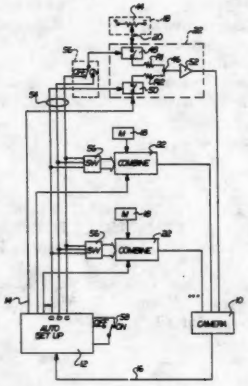
APPARATUS PROVIDING AUTOMATIC AND MANUAL CONTROL OF SETUP ADJUSTMENTS FOR TV CAMERAS

Gary M. Sanderson, and Charles M. White, both of Quincy, Ill., assignors to Harris Corporation, Melbourne, Fla.

Filed Apr. 9, 1981, Ser. No. 252,474

Int. Cl.[4] H04N *5/232*

U.S. Cl. 358—10 **18 Claims**



1. Apparatus for setting up a television camera in cooperation with a closed loop auto setup system which provides at least one setup control signal to the camera and, during an automatic setup operation, responds to at least one video signal provided by the camera to automatically adjust the level of the setup control signal, said apparatus comprising a manual control which permits manual variation of the level established by the auto setup system, and means for disabling the manual control during said automatic setup operation in such a manner that during said setup operation any setting of the manual control will not influence the level of the setup control signal.

4,564,857

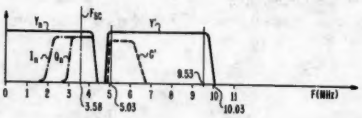
ASPECT RATIO IMPROVEMENT FOR COMPATIBLE HIGH-DEFINITION TELEVISION

Joseph L. LoCicero, Riverside; Melih Pazarci, Chicago, and Theodore S. Rzeszewski, Lombard, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 28, 1984, Ser. No. 584,526

Int. Cl.[4] H04N *11/20, 11/06*

U.S. Cl. 358—11 **20 Claims**



1. A system for encoding high-definition luminance and chrominance information from a high-definition video source having low-frequency chrominance and luminance information and high-frequency luminance and chrominance information and extended aspect ratio luminance and chrominance information, said system comprises

means for encoding said low-frequency luminance and chrominance information into a first baseband signal;

means for encoding said high-frequency luminance and chrominance information into a second baseband signal;

means for filtering said extended aspect ratio luminance and chrominance information from said high-definition luminance and chrominance information;

means for gating said filtered extended aspect ratio luminance and chrominance information into said horizontal retrace interval of said second baseband signal; and

means for transmitting said first baseband signal and said second baseband signal including the gated extended aspect ratio luminance and chrominance information in said horizontal retrace interval thereof.

4,564,858

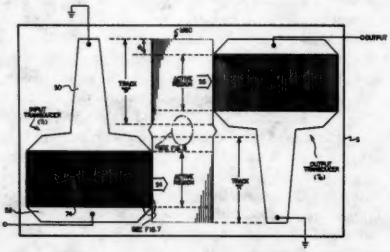
TELEVISION SAW/VSB FILTER INCORPORATING RECEIVER EQUALIZER

William A. Resch, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 363,819, Mar. 31, 1981, abandoned. This application Aug. 10, 1984, Ser. No. 640,209

Int. Cl.[4] H04N *5/40;* **H03H** *9/44, 9/64*

U.S. Cl. 358—21 R **4 Claims**



1. A visual exciter for use in a TV broadcasting system comprising

means for receiving an unequalized and undelayed video signal to be broadcast,

IF modulator means for modulating an intermediate frequency (IF) carrier signal in accordance with said unequalized and undelayed video signal,

filtering means for filtering the modulated IF carrier signal provided by said modulator means, said filtering means comprising a SAW filter having an amplitude versus frequency characteristic selected to provide vestigial sideband filtering of said modulated IF carrier signal, and further having a time delay versus frequency characteristic selected to provide receiver equalization of said modulated IF carrier signal, and

frequency translating means responsive to the filtered and equalized signal provided by said filtering means for translating the frequency of said signal to a carrier frequency suitable for broadcasting.

4,564,859

METHOD AND AN APPARATUS FOR PRODUCING COLOR SEPARATIONS FOR SINGLE COLOR PRINTING

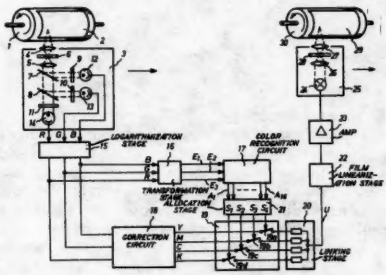
Hans-Georg Knop, Heikendorf; Michael Nowak, Kiel; Friedrich Redecker, Heikendorf, and Ralf Tiede, Klausdorf, all of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Oct. 19, 1983, Ser. No. 543,521

Claims priority, application European Pat. Off., Oct. 22, 1982, 82 109759.9; Dec. 24, 1982, 82 112002.9

Int. Cl.[4] H04N *1/46*; G03F *3/08*

U.S. Cl. 358—75 **13 Claims**



8. An apparatus for producing color separations for single-color printing, comprising:

(a) an optoelectronic scanning means for scanning a master having a plurality of colors and for generating color signals;

(b) a color recognition means connected to the scanning means for producing color recognition signals from said color signals, said color recognition signals identifying the colors of said master during the scanning of said master;

(c) a correction means connected to the scanning means for generating corrected color separation signals from said color signals;

(d) circuit means connected to the correction means and to the color recognition means wherein corrected color separation signals are each controlled by at least one selected color recognition signal representing a selected color of said master and for forming a recording signal from at least two controlled corrected color separation signals; and

(e) a recording means connected to the circuit means and controlled by said recording signal for point-by-point and line-by-line recording of color separations for colors of said master.

4,564,860

METHOD AND SYSTEM OF MEASURING IMAGE AREA

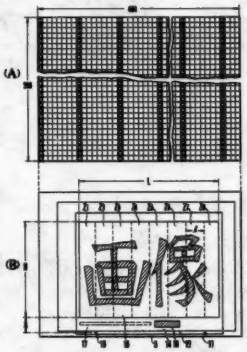
Toshio Ohta, Ibaragi, Japan, assignor to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Filed Jan. 30, 1984, Ser. No. 575,047

Claims priority, application Japan, Jan. 31, 1983, 58-13894

Int. Cl.[4] H04N *7/18*

U.S. Cl. 358—107 **3 Claims**



1. In an image area measuring apparatus of the type wherein an image bearing surface of a lithographic printing plate is divided into a plurality of zones and photographed with a television camera to produce an analog image signal which is converted into a digital signal to obtain a measured value, the image area of each zone is calculated based on the measured value and a quantity of printing ink supplied at the time of printing to said lithographic printing plate is determined according to said image area, a method of measuring an image area of said lithographic printing plate, comprising the steps of:

forming a solid portion and a blank portion in a margin defining the image bearing surface of said lithographic printing plate, wherein said solid portion is formed in any part of a lateral lower portion of said margin, and said blank portion is formed in a left half of the lateral lower portion of said margin which corresponds to half of said image bearing surface, and wherein said solid and blank portions correspond to portions having 100% and 0% dot ratios, respectively;

defining a first average value of electrical signals obtained from said solid portion to be a first reference value for the 100% dot ratio, and a second average value of electrical signals obtained from said blank portion to be a second reference value for the 0% dot ratio; and

coverting electrical signals from said image bearing surface to area percentage data in accordance with the first and second reference values.

4,564,861

SUBTRACTION PROCESSING METHOD AND APPARATUS FOR RADIATION IMAGES

Kazuhiro Hishinuma, and Akihiro Ohga, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 23, 1983, Ser. No. 507,248

Claims priority, application Japan, Aug. 17, 1982, 57-142499

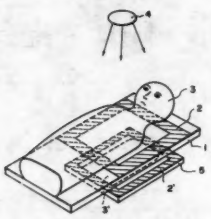
Int. Cl.[4] H04N *5/32*

U.S. Cl. 358—111 **10 Claims**

1. A subtraction processing method for radiation images including the steps of recording two or more radiation images on separate stimulable phosphor sheets, at least a part of image information being different among said radiation images, scanning the respective stimulable phosphor sheets with stimulating rays to sequentially release the radiation energy stored in

the stimulable phosphor sheets as light emission, photoelectrically detecting the emitted light by a light detecting means to obtain digital image signals of the respective radiation images, and extracting an image of a specific structure contained in at least one of said radiation images by conducting a subtraction processing among said digital image signal,

the subtraction processing method for radiation images comprising:



(i) when each radiation image to be subtraction processed is recorded on each stimulable phosphor sheet, simultaneously recording a marker having a shape defining at least one edge portion of the radiation image area in a position fixed with respect to said radiation image, and

(ii) reading out image signals of said radiation image by using the detected signal of said edge portion defined by said marker as the synchronizing signal.

4,564,862

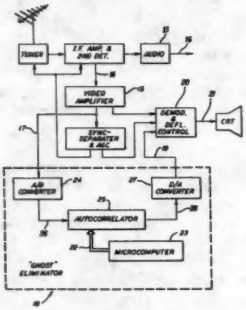
GHOST SIGNAL ELIMINATION CIRCUIT

Edwin Cohen, 5 Crestmont Rd., Binghamton, N.Y. 13905

Filed Aug. 9, 1982, Ser. No. 406,331

Int. Cl.[4] H04N *5/21;* H04B *1/12*

U.S. Cl. 358—167 **1 Claim**



1. A ghost signal elimination circuit for eliminating an unwanted signal from a composite signal in which the unwanted signal is a replica of a wanted signal but is shifted in time from the wanted signal, comprising:

circuit means to receive said composite signal including the wanted signal and the unwanted replica signal;

autocorrelater circuit means connected to said circuit means to receive said wanted signal and said unwanted replica signal to compare the unwanted replica signal with the wanted signal according to the mathematical relationship:

$$C_{1,2} = \frac{1}{T_o} \int_{-T_o/2}^{+T_o/2} v_1(t) \cdot v_2(t + D)dt$$

where:

$C_{1,2}$ is the correlation between the wanted signal and the unwanted signal,

D is the time shift between the two signals,

T_o is the period of the two signals,

v_1 is the magnitude of the wanted signal,

v_2 is the magnitude of the unwanted signal;

said autocorrelator circuit means including means to perform the functions of time delay, multiplication and integration on said wanted signal and said unwanted signal, respectively, to generate a single output signal corresponding to said wanted signal, and

means connected to said autocorrelator circuit means for receiving said output signal for use with said ghost signal substantially eliminated.

4,564,863

METHOD AND DEVICE FOR ADJUSTING THE BLACK LEVEL OF A VIDEO SIGNAL

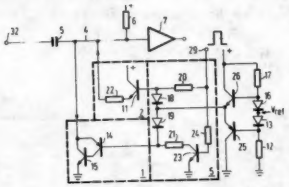
Pascal Chameroy, Puteaux, and Alain Decraemer, Garches, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 16, 1983, Ser. No. 562,339

Claims priority, application France, Dec. 22, 1982, 82 21565

Int. Cl.[4] H04N *5/18;* H03L *5/00;* H03B *1/04, 19/00*

U.S. Cl. 358—172 **4 Claims**



1. Device for adjusting the black level of a video signal which is transferred by a capacitor, the device being provided with a controllable voltage source connected to a conductor at an output of the capacitor which conducts said video signal, which voltage source is formed by a first part for delivering a current in a first direction, and by a second part for delivering a current in a second direction, in which one of the two parts has a weak internal impedance while the other part has a higher internal impedance, and in which a common control circuit simultaneously activates the two parts during the entire duration of a line flyback.

4,564,864

IMAGE FORMING APPARATUS

Katsuyoshi Maeshima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 25, 1982, Ser. No. 436,431

Claims priority, application Japan, Nov. 4, 1981, 56-175716; Nov. 4, 1981, 56-175718

Int. Cl.[4] H04N *1/32, 1/40*

U.S. Cl. 358—280 **13 Claims**

1. An image forming apparatus comprising:

input means for sequentially entering image information, which information is organized in lines, on each line with a first timing;

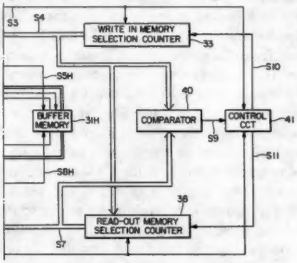
plural memory means each capable of storing a line of image information therein;

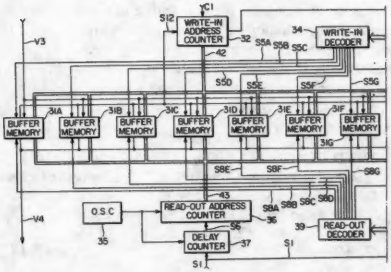
write-in means for sequentially selecting one by one said plural memory means, and writing in the image information entered from said input means into the selected memory means;

read-out means for sequentially selecting one by one said plural memory means, and reading out the image information on each line from the selected memory means with a

second timing independent of the first timing, while the writing-in operation by said write-in means is carried out; and

recording means for performing image recording with the second timing in accordance with the image information read out from said memory means,





wherein said read-out means starts operation for selection of said memory means in accordance with the selection operation by said write-in means so as not to permit simultaneous selection of the same memory means by said write-in means and said read-out means.

4,564,865

PICTURE SCANNING AND RECORDING METHOD

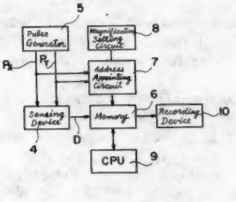
Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Japan

Filed May 10, 1983, Ser. No. 493,414

Claims priority, application Japan, May 24, 1982, 57-88355

Int. Cl.⁴ H04N *1/04*

U.S. Cl. 358—287 **2 Claims**



1. A method for recording at a predetermined magnification ratio a reproduction of a figure in an original picture from image signals corresponding to pictorial elements of the figure obtained by photoelectrically scanning the picture, comprising the steps of:

writing successive image signals into a memory device at successive designated addresses, each such designated address having a magnification unit group of addresses defining a matrix of addresses associated therewith;

for each such matrix whose designated address holds a non-blank signal, writing that non-blank signal into all addresses of the matrix, thereby forming a filled matrix;

for each such matrix whose designated address holds a blank image signal and has blank addresses located diagonally between addresses of adjacent filled matrices, writing into each such blank address the non-blank image signal of one of the adjacent filled matrices, thereby smoothing rugged contour lines of the figure whose image signals are stored in the memory device; and

sequentially reading image signals written into the memory device by the foregoing steps to operate a recording device, thereby recording the reproduction at the predetermined magnification ratio.

4,564,866

OPTICAL PRINTER

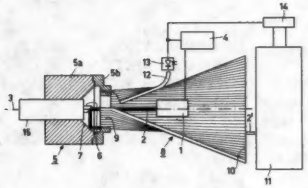
Albert Comberg, Aachen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 24, 1982, Ser. No. 444,414

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1981, 3146872

Int. Cl.⁴ H04H *1/22*

U.S. Cl. 358—302 **6 Claims**



1. An optical printer, comprising an information-controlled light source radiating a light beam along an axis; rotatable mirror means for reflecting the beam from said axis through an angle in a radial plane passing through said axis, said means including means for continuously rotating the angular position of said radial plane; a circular-to-linear convertor consisting of an array of optical fibers, each of said fibers having a first and a second end, the respective second ends being arranged in a straight line; and a photosensitive record carrier disposed opposite said second ends for receiving light from respective ones of the fibers,

characterized in that said first ends of said fibers are arranged parallel to each other in a circular cylindrical pattern coaxially about said axis, each first end having a face which is perpendicular to said axis, and

said printer comprises a conical mirror arranged coaxially about said axis, arranged to reflect said light beam into a selected at least one of said end faces corresponding to the instantaneous angular position of the rotatable mirror means.

4,564,867

VIDEO DISC RECORDING AND REPRODUCING DEVICE FOR VIDEO DISCS HAVING RECOGNITION SIGNAL INDICATIVE OF CONTENT OF ASSOCIATED PROGRAM SIGNAL

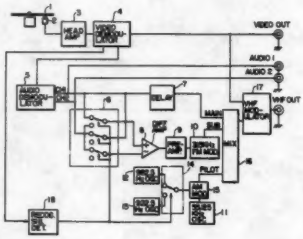
Tohru Nakajima, Saitama, Japan, assignor to Universal Pioneer Corporation, Tokyo, Japan

Filed Jul. 23, 1981, Ser. No. 286,222

Claims priority, application Japan, Jul. 24, 1980, 55-104844[U]; Mar. 16, 1981, 56-36611[U]

Int. Cl.⁴ H04N *5/76*

U.S. Cl. 358—342 **5 Claims**



1. A video disc system, comprising; a video disc on which a video signal and two-channel audio signals are recorded in a multiplex mode, a recognition signal multiplexed with said video and audio signals, detecting means for detecting said recognition signal upon playing said video disc, said recognition signal identifying whether said audio signals are stereo program signals or split program signals recorded in a multiplex mode, signal reproduction means for reproducing said two-channel audio signals and video signal, respectively, selection means for selecting processing of said reproduced two-channel audio signals as (1) a pair of sum and difference signals or, (2) a pair of audio signals processed independently of each other, in response to said recognition signal detected by said detecting means.

4,564,868

VIDEO TAPE RECORDER HAVING IMPROVED AUDIO CHARACTERISTICS

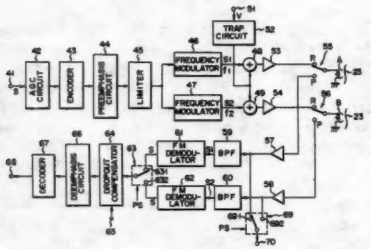
Yasunari Arafune, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 2, 1983, Ser. No. 463,300

Claims priority, application Japan, Feb. 4, 1982, 57-15516; Nov. 19, 1982, 57-202947

Int. Cl.⁴ H04N *5/782*

U.S. Cl. 360—19.1 **19 Claims**



1. A video tape recorder comprising:

first and second video heads adapted to helically scan a magnetic tape to record a sigal thereon or to reproduce a signal therefrom;

frequency modulating means for frequency-modulating an audio source signal in a recording mode to produce a first audio recording signal;

first frequency-converting means for frequency-converting the first audio recording signal in the recording mode to produce a second audio recording signal adapted to be recorded on said magnetic tape, and for frequency-converting a second audio playback signal reproduced from said magnetic tape in a playback mode to produce a first audio playback signal;

second frequency converting means for frequency-converting the first audio recording signal in the recording mode to produce a third audio recording signal to be recorded on said magnetic tape and for frequency-converting a third audio playback signal reproduced from said magnetic tape in the playback mode to produce a first audio playback signal;

FM demodulating means for FM-demodulating the first audio playback signals from said first and second frequency-converting means to reproduce an audio source signal;

switching means for supplying the second and third audio recording signals from said first and second video heads, in the recording mode, and for supplying the second and third audio playback signals reproduced by said first and second video heads to said first and second frequency converting means, respectively, in the playback mode; and

carrier generating means for generating first and second carrier signals for frequency conversion which are supplied to said first and second frequency converting means, respectively, the frequency of said first carrier signal being different from the frequency of said second carrier signal.

4,564,869

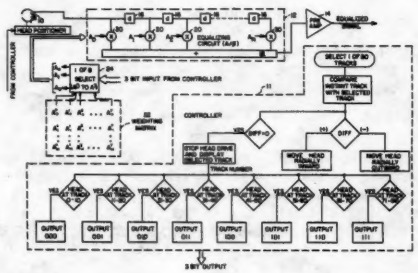
ZONED EQUALIZATION FOR A MAGNETIC DISC

Hans-Peter Baumeister, Churchville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 21, 1983, Ser. No. 553,894

Int. Cl.⁴ G11B *5/09, 5/45*

U.S. Cl. 360—46 **7 Claims**



1. Apparatus for use with a rotatable magnetic recording disc of the type disposed to have information magnetically recorded about the rotary axis of said disc, said apparatus comprising:

(a) means for rotating said magnetic disc about the rotary axis thereof,

(b) magnetic head means cooperative with said disc for Processing signals to or from said disc,

(c) means for positioning said magnetic head means from one radial position relative to the rotary axis of said disc to another radial position relative to said rotary axis,

(d) equalizer means for modifying said signals, and

(e) means cooperative with said means for positioning said magnetic head means for altering the operation of said equalizer means as a function of the radial distance of said head from the rotary axis of said disc,

said magnetic head means being a playback head, and said

means for altering the operation of said equalizer means comprising:

(a) means for separating the radial positions of said head into zoned positions thereof, and

(b) means for incrementally altering the operation of said equalizer means in accordance with the zoned positions of said head,

said equalizer means being a transversal filter, and said apparatus further comprising:

(a) means for providing a plurality of groupings of weighting constants for said filter, and

(b) means for selectively applying said groupings of weighting constants to said filter respective of said zoned positions.

4,564,870

SIGNAL DETECTOR OF MAGNETIC DISK APPARATUS

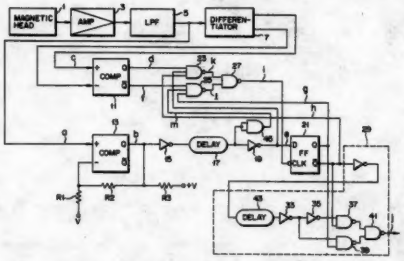
Shunji Kitamura, Hanno, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 23, 1983, Ser. No. 535,163

Claims priority, application Japan, Sep. 28, 1982, 57-168853

Int. Cl.[4] G11B *5/09, 5/02*

U.S. Cl. 360—51 **9 Claims**



1. A signal detector for a magnetic disk apparatus having a magnetic head for reading/writing data and a differentiator circuit for differentiating an analog signal produced by said magnetic head, comprising:

zero crossing means, coupled to said differentiator circuit, for detecting the zero-crossing point of the output of said differentiator circuit;

peak detecting means, coupled to said differentiator circuit, for generating a signal representing the peaks of the output signal from said magnetic head;

gate enable signal generating means, coupled to said output from said magnetic head, for generating a signal enabling said zero crossing means to supply an output to said peak detecting means based on said output signal from said magnetic head; and

gate disable signal generating means for prohibiting the output from said zero crossing means from being supplied to said data generating means, based on the output from said gate enable signal generating means and the output from said means;

said peak detecting means being coupled to said zero detecting means, said gate enable signal generating means and said gate disable signal generating means.

4,564,871

AUTOMATIC RECORD-LOCKOUT MECHANISM

Claude E. Cybulski, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 27, 1983, Ser. No. 565,879

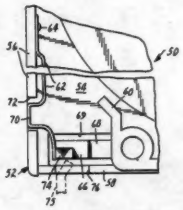
Int. Cl.[4] G11B *15/04*

U.S. Cl. 360—60 **17 Claims**

1. Tape cassette comprising a housing having broad, parallel facewalls and connecting edgewalls, in one of which is formed a record-lockout opening, said housing incorporating an automatic record-lockout mechanism comprising

spring means, including a record-lockout tab pivotably mounted between said facewalls, for biasing said tab away from said record-lockout opening, and

means mounted between said facewalls for cocking said spring means with its record-lockout tab blocking said record-lockout opening,



said spring means including means actuatable by a tang projecting from a cassette deck for releasing said cocking means while retaining said record-lockout tab in the blocking position in the presence of the tang and allowing said tab to pivot to unblock the record-lockout opening when the cassette is removed from the deck and its tang.

4,564,872

MAGNETIC HEAD DRIVING UNIT

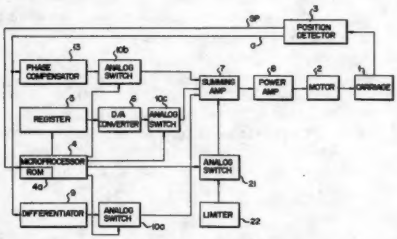
Yasuyuki Oda, and Kazuhiko Iwase, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 16, 1983, Ser. No. 523,775

Claims priority, application Japan, Aug. 26, 1982, 57-148216

Int. Cl.[4] G11B *5/55*

U.S. Cl. 360—78 **3 Claims**



1. A magnetic head driving unit, comprising:

magnetic head means;

carriage means for implementing a seek operation of said magnetic head means;

motor means for driving said carriage means;

data processing means for determining whether the first seek operation is completed, which positions the head on a predetermined cylinder when the magnetic head driving unit is powered;

analog switch means operated by a control signal from said data processing means after the determination; and

driving current control means for restraining the driving current for the motor in a predetermined value at the first seek operation when said analog switch is ON, thereby restraining the maximum acceleration of said carriage means.

4,564,873
MAGNETIC RECORDING AND REPRODUCING APPARATUS

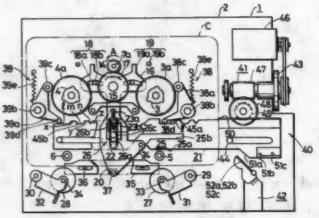
Koosuke Hashimoto, and Motoyuki Gotoh, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Sep. 30, 1982, Ser. No. 429,989

Claims priority, application Japan, Oct. 6, 1981, 56-160632; Oct. 7, 1981, 56-161734; Oct. 7, 1981, 56-161735; Oct. 7, 1981, 56-161736; Oct. 7, 1981, 56-161737; Oct. 7, 1981, 56-161738; Oct. 12, 1981, 56-162248

Int. Cl.[4] G11B *5/008, 17/00*

U.S. Cl. 360—90 **12 Claims**



1. A magnetic recording and reproducing apparatus having a pair of magnetic tape reels and a magnetic tape, comprising:

a base plate;

a forward and reverse rotation driving mechanism having an output shaft rotating one of forward and reverse directions;

first and second reel gears each having a rotation shaft and each of said first and second reel gears for driving the pair of magnetic tape reels, said first and second reel gears being rotatably supported by the rotation shafts attached to the base plate at a predetermined distance from the base plate;

a pinion being disposed between said first and second reel gears and in rotatable contact with the output shaft for rotating in one of the forward and reverse directions, said pinion being rotated in association with the output shaft of the forward and reverse rotation driving mechanism;

an idler gear engaged with said pinion and being pivotable between two engage positions to selectively engage one of said first and second reel gears; and

a rack secured to said base plate, said rack being engaged with said idler gear at an approximately center position between the two engage positions, and said rack providing a feeding force to said idler gear through one of the forward and reverse direction rotations of said pinion.

4,564,874
CASSETTE RECORDER WITH FREELY PIVOTING EJECTION LEVER

Lucas W. M. Schijven, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 19, 1982, Ser. No. 399,936

Claims priority, application Netherlands, Aug. 17, 1981, 8103832

Int. Cl.[4] G11B *15/68*

U.S. Cl. 360—96.1 **20 Claims**

1. A cassette recorder comprising:

a chassis,

a head support mounted on the chassis for movement with respect to the chassis, and a pressure roller and a magnetic head mounted on the support,

an ejection spring,

a cassette compartment for receiving a magnetic cassette,

an ejection lever pivotably mounted to said chassis, and arranged such that, upon insertion of a cassette into said compartment the lever is pivoted in an insertion direction to an end position so as to tension the ejection spring,

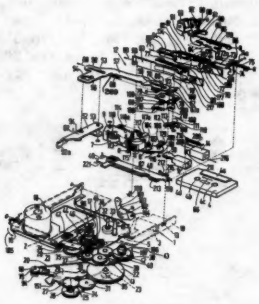
a capstan arranged for driving a magnetic tape in a cassette placed in the compartment, and drive means for driving the capstan and for transporting the tape past the magnetic head,

switching means for moving the head support toward the cassette,

means, responsive to pivoting of said lever in said insertion direction, for actuating said switching means to move the head support toward the cassette,

characterized by comprising an ejection member arranged to be movable with respect to said chassis in at least a first direction between a rest position and an actuated position,

means for connecting the ejection spring to the ejection member arranged such that the ejection spring is tensioned by movement of the member in said first direction,



latching means for latching the ejection member in an actuated position, and

means for coupling the ejection member to the ejection lever, at least during insertion of the cassette, arranged such that said ejection member is moved from the rest position to the actuated position in response to said pivoting of said lever in said insertion direction, and the ejection lever can be pivoted freely over at least a given distance, relative to the ejection member, when the ejection member is in the actuated position; and that, upon release of said latching means, said ejection member moves from the actuated position to the rest position under the influence of said ejection spring, the force of the tensioned ejection spring pivoting said ejection lever to eject an inserted cassette from the compartment.

4,564,875
CASSETTE LOADING DEVICE IN A CASSETTE TAPE RECORDER

Ryuji Ihara, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 20, 1982, Ser. No. 380,426

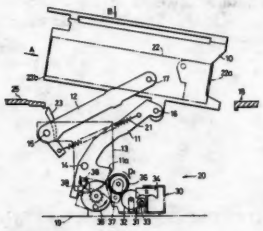
Claims priority, application Japan, May 29, 1981, 56-78524[U]; May 29, 1981, 56-78527[U]

Int. Cl.[4] G11B *15/00, 17/00*

U.S. Cl. 360—96.6 **6 Claims**

1. A cassette loading device in a cassette tape recorder having a cassette housing adapted to receive and accommodate a cassette which is extractably inserted thereinto, said housing moving between a cassette extraction position and a cassette loading space, said cassette loading device comprising a pair of flanges mounted on a chassis, two pair of support arms having top ends which are pivotally connected to the cassette housing and bottom ends which are connected to said pair of flanges so that the cassette housing is supported and substantially vertically displaced between the cassette extraction position and the cassette loading space, and a cassette guiding member having a

curved surface which is disposed to face said cassette loading space in order to guide the cassette into said cassette loading space, said curved surface having a pair of protruding and inclined guide ribs which function, during a cassette loading operation with the cassette in a state wherein it is not completely accommodated within the cassette housing, to guide



the rear part as viewed in the insertion direction of the cassette at an intermediate point during the entering of the cassette housing wherein upon completion of the cassette loading operation, the cassette guiding member does not contact the cassette into the cassette loading space to press the cassette fully and positively into the cassette housing.

4,564,876

ROTARY MAGNETIC HEAD DEVICE

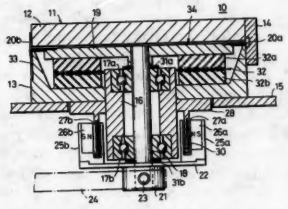
Toshinori Takahashi, Kawasaki; Hisanori Tsumiyama; Keigo Okano, both of Yokohama, and Yoshitaka Iwabuchi, Yamato, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 23, 1982, Ser. No. 443,922

Claims priority, application Japan, Nov. 30, 1981, 56-192495

Int. Cl.[4] G11B *5/52, 21/04, 21/18*

U.S. Cl. 360—107 **9 Claims**



1. A rotary magnetic head device comprising:

a rotary body having magnetic heads mounted thereon, said heads rotating while scanning over a traveling magnetic tape, said heads scanning over tracks formed obliquely with respect to the longitudinal direction of the tape to reproduce recorded signals;

bearing means for bearing said rotary body in a freely rotatable state and in a state freely displaceable in a direction parallel to an axis of rotation of said rotary body; and

displacing means for electromagnetically displacing said rotary body along a path parallel to the axis of rotation thereof so that said heads are displaced simultaneously to follow and scan over tracks on said tape.

4,564,877

MAGNETIC RECORDING/REPRODUCING SYSTEM WITH WIDE-GAPPED TRANSDUCER AND METHOD FOR USING SAME

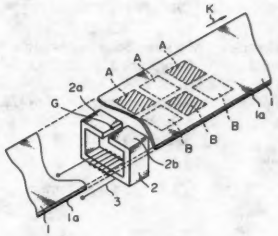
Joichiro Ezaki; Hiroshi Kanai, and Yoshimi Kitahara, all of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Apr. 20, 1983, Ser. No. 486,682

Claims priority, application Japan, Apr. 28, 1982, 57-72211; Apr. 28, 1982, 57-72212; Apr. 28, 1982, 57-72213

Int. Cl.[4] G11B *5/22, 5/30*

U.S. Cl. 360—114 **8 Claims**



1. A method of recording digital information on a magnetic recording medium comprising the steps of:

moving a magnetic head relative to the magnetic recording medium, the magnetic head being designed in the shape of a C-ring with a pair of confronting yokes, said yokes defining a gap therebetween having a longitudinal direction coinciding with the direction of said relative movement, said gap being wide enough so that magnetic flux generated in said C-ring by flowing current in a coil wound around the C-ring does not short-circuit said gap, but goes through the first yoke, a first region of the recording medium, a second region of said recording medium, and the second yoke of said head;

generating magnetic flux according to the respective shapes of the surfaces of the yokes of the magnetic head facing the magnetic recording medium; and

differentially magnetizing two regions of the magnetic recording medium to record a pair of two dimensional patterns thereon for each bit of information, the two regions being aligned transverse to the direction of said relative movement.

4,564,878

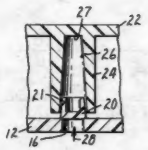
CASSETTE REMOVABLE PIECE

Mark W. Weavers, Little Canada; Charles D. Gebeke, White Bear Lake, both of Minn., and Ken'ichi Yamasaki, Tokyo, Japan, assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Feb. 7, 1984, Ser. No. 577,778

Int. Cl.[4] G11B *23/02, 15/04*

U.S. Cl. 360—132 **9 Claims**



1. A recording cassette comprising a pair of shells, each having a broad wall, and a length of recording medium within the shells, said shells including a removable piece adapted to be

broken from one broad wall to form a hole that can be recognized by a hole-sensing mechanism of a deck adapted to receive the cassette and a chamber projecting from the other broad wall, said chamber having an inner surface defining an opening adjacent to and larger than said removable piece for receiving the removable piece, and a tapered interior having a portion smaller than the piece that will frictionally engage and permanently retain the removable piece when the removable piece is forced into the chamber.

4,564,879

ELECTRONIC POWER OVERLOAD PROTECTION CIRCUIT

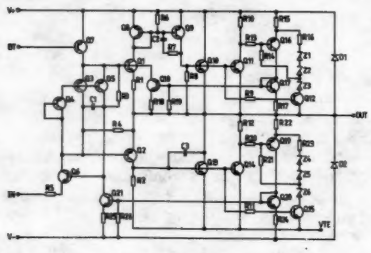
Luc A. Bienstman, Mechlin, Belgium, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 8, 1983, Ser. No. 530,181

Claims priority, application Belgium, Sep. 20, 1982, 894437; European Pat. Off., Aug. 25, 1983, 83201226.4

Int. Cl.⁴ H02H *7/20*

U.S. Cl. 361—98 **16 Claims**



1. Electronic power overload protection circuit for limiting the output power of a signal amplifier, comprising means for sensing the output voltage of the amplifier; and means for limiting the output current of the amplifier in dependence on the output of said sensing means, when said output voltage is between a lower one and a higher one of two predetermined output voltage values, to a first threshold which gradually decreases substantially linearly with increasing output voltage at a first rate and, when said output voltage exceeds said higher one of said predetermined output voltage values, to a second threshold which gradually decreases substantially linearly with increasing output voltage at a second rate that is lower than said first rate.

4,564,880

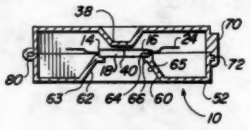
APPARATUS AND METHOD FOR PROTECTING INTEGRATED CIRCUITS

Allen E. Christ, Scottsdale, and Thomas A. Roche, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 14, 1984, Ser. No. 589,904

Int. Cl.⁴ H05F *1/02*

U.S. Cl. 361—212 **18 Claims**



1. A carrier having a closed mode for housing an integrated circuit having conductive leads attached to a rigid body, said carrier comprising:

(a) an enclosure having a top section and having a bottom section;

(b) means for electrically connecting said enclosure top and bottom sections together;

(c) means for maintaining said enclosure top and bottom sections in the closed mode; and

(d) means for holding the integrated circuit rigid body inside said enclosure between said top and bottom sections so that the conductive leads are unsupported by the carrier.

4,564,881

DEVICE FOR ELECTRICALLY MEASURING A LIQUID LEVEL

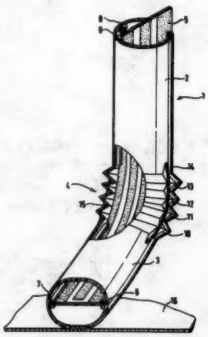
Bernhard Kant, Eschborn, and Hasko Jakobs, Hofheim, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 10, 1984, Ser. No. 659,472

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1983, 3339325

Int. Cl.⁴ H01G *5/36*; G01F *23/26*

U.S. Cl. 361—284 **9 Claims**



1. In a device for electrically measuring a level of a liquid contained within a container, the device having a conductive foil which is surrounded by a protective tube and which extends into the liquid, the foil being either a temperature-dependent electrically externally-heated resistance foil wherein the resistance can be determined by an evaluation circuit and wherein the resistance is dependent on the level of the liquid in the container or a capacitance foil bearing two conductors which form a capacitor wherein the capacitance can be determined by an evaluation circuit and wherein the capacitance is dependent on the level of the liquid in the container, in both cases the conductive foil being developed as a flat band and being held untwisted in the protective tube, by holding members which act on at least one of the longitudinal edges of the conductive foil, in such a manner that both of its surfaces can be washed over by the liquid, the improvement wherein:

the protective tube comprises two rigid tube sections;

joint means for connecting said two rigid tube sections to each other;

said joint means being movable transverse to the surface of the conductive foil;

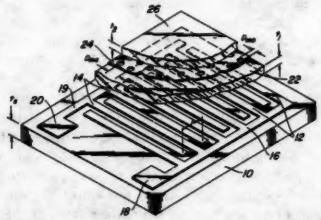
said joint means urging the tube sections into a position in which they are aligned with other.

4,564,882

HUMIDITY SENSING ELEMENT

Ronald D. Baxter, and Paul J. Freud, both of Furlong, Pa., assignors to General Signal Corporation, Stamford, Conn.

Filed Aug. 16, 1984, Ser. No. 641,534
Int. Cl.[4] H01G 5/20
U.S. Cl. 361—286 10 Claims



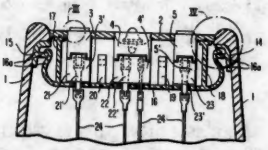
1. A capacitance humidity sensing element comprising:
a non-conducting substrate;
at least two separate thin metal film electrodes deposited on said substrate;
a first thin dielectric film of a water absorbing material covering said electrodes and the supporting substrate, said material being such that its dielectric constant varies with the amount of water absorbed;
an electrically conductive water permeable mesh covering said first dielectric film, said mesh having openings which are substantially evenly distributed over its surface to provide its water permeable characteristic; and
a second thin film of water absorbing material covering said mesh.

4,564,883

CONTROL UNIT FOR A MOTOR VEHICLE WHICH CAN BE ACCOMMODATED IN A TRIM COMPONENT

Wilhelm Bauer, Sindelfingen; Josef Berger, Wolfschlugen; Horst Dahm, Ostelsheim; Hans Klemm, Sindelfingen; Peter Schmid, Schorndorf; Horst Seidl, Boblingen, and Dietmar Walter, Winnenden, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 4, 1982, Ser. No. 439,021
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143888
Int. Cl.[4] H02B 1/04
U.S. Cl. 361—334 5 Claims



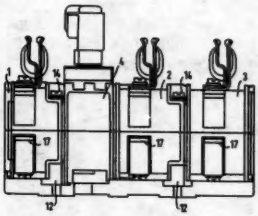
5. A control unit removably attached in an aperture to a trim component, the trim component having parallel guide means and installed inside a passenger compartment of a motor vehicle, the control unit having at least one switch and at least one base for receiving an electrical signal comprising:
a baseplate receiving said at least one base, the baseplate having clip means attaching the baseplate to the trim component in such a manner that the baseplate can be shifted in the plate defined by the outline of the baseplate,
a masking plate means forming a cover panel and engaging the baseplate for stabilizing the position of the baseplate positionally with respect to the trim component and wherein
the baseplate comprises at least one handhold.

4,564,884

ELECTRICAL APPARATUS WITH BASE PLATE

Wilfried Klemt, Amberg, and Manfred Krones, Freihung, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 13, 1983, Ser. No. 503,799
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1982, 8218134[U]
Int. Cl.[4] H02B 1/04
U.S. Cl. 361—353 4 Claims



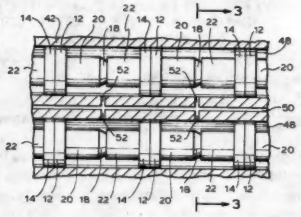
1. An electrical device of the type formed of a plurality of individual substantially plate-shaped multipolar switching components which are secured to a base plate, the base plate comprising at least first and second base plate portions disposed in a common first plane extending substantially perpendicularly to said multipolar switching components, said multipolar switching components being secured to only said first base plate portion, said base plate portions being separably joined to one another along a second plane extending perpendicularly to said multipolar switching components and said first plane, one of said base plate portions being provided with a plurality of integral projections disposed in said first plane, the other of said base plate portions being provided with a plurality of recesses, said projections extending into said recesses in an assembled state of said base plate portions, said second base plate portion taking the form of an electrical socket plate including an extension arranged at an angle with respect to said first base plate portion, said extension being provided with a plurality of socket formations along an edge parallel to and spaced from said first plane.

4,564,885

RECTIFIER WITH SLUG CONSTRUCTION AND MOLD FOR FABRICATING SAME

T. Michael McCann, Taipei, Taiwan, assignor to General Instrument Corporation, New York, N.Y.

Filed Sep. 10, 1984, Ser. No. 648,672
Int. Cl.[4] H01G 9/16; H01L 23/28, 3/00
U.S. Cl. 361—436 12 Claims



1. A rectifier comprising a substantially cylindrical body

situated between first and second end parts to form a unit, said end parts extending radially beyond the surface of said body and defining therebetween a recess adapted to receive a molding compound applied by injecting the compound into the recess when the unit is situated within a substantially cylindrical cavity in a mold, the cavity having a diameter substantially equal to the diameters of said end parts and being substantially longer than said unit, the end parts cooperating with the cavity walls to substantially seal said recess from the remainder of the cavity, the compound being injected into the recess through an opening in said cavity wall aligned with the recess.

4,564,886

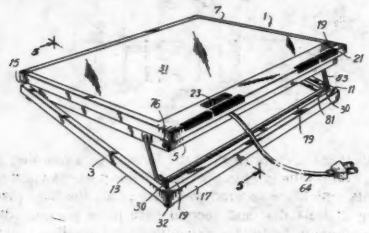
PORTABLE LIGHT BOX

Bernard Morcheles, Short Hills, N.J., assignor to Stacor Corporation, Newark, N.J.

Filed Oct. 7, 1982, Ser. No. 433,254

Int. Cl.[4] G09F *13/04*; F21L *15/12*

U.S. Cl. 362—97 **10 Claims**



1. A portable light box comprising:

(a) a light tray;

(b) a light source arranged in said light tray;

(c) a cover hinged to said light tray for relative rotation of said cover about an axis, said cover being provided with an aperture;

(d) a diffuser arranged in said aperture;

(e) a base hinged to said light tray for relative rotation of said base about an axis; and

(f) bail means arranged to releasably engage said cover and said light tray, whereby said cover and light tray can be coupled, and arranged to rotate about an axis defined by said coupling, said bail means having first and second positions, wherein said bail means supports said cover and said light tray at a predetermined angle of inclination with respect to said base when said bail means is in said first position, and said bail means extends outside of said light box for use as a carrying handle when said bail means is in said second position and said cover is closed with respect to said base.

4,564,887

LIGHTED NOTEPAPER TRAY

Mike Kier, 9134 Dillon, La Mesa, Calif. 92041

Filed Jul. 25, 1983, Ser. No. 516,540

Int. Cl.[4] F21V *33/00*

U.S. Cl. 362—99 **3 Claims**

1. A lighted notepaper holder comprising:

(a) a frame defining a notepaper tray;

(b) lighting means in said frame to illuminate paper in said tray;

(c) an open trough with outer regions defined by said frame;

(d) an electrical circuit for energizing said lighting means;

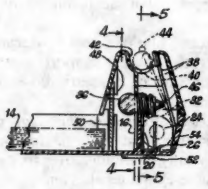
(e) a switch having a trigger biased into said trough which is displaced to open said circuit when a writing implement is placed in said trough, and closes said circuit when said implement is removed from said trough, said trigger also serving as a detent to removably hold a writing implement in place in said trough;

(f) said trigger being positioned to bear against an upper portion of a writing implement in said trough and having a downward component of force against said writing implement to act as a detent for same when in said trough;

(g) said circuit consisting of a single pair of conductive wires interconnecting a light bulb and two-terminal battery means and defining a switch therewith; and

(i) one of said wires being coiled at one end to define a socket for said light bulb and at the other end defining a contact for one terminal of said battery means; and,

(ii) the other of said wires having one end defining a contact for the other terminal of said battery means and the other end of said other wire being resilient and passing beyond, said being biased against, the terminal tip of said light bulb to define said on-off switch therewith, and terminating in said trigger such that movement of said trigger toward the outer regions of said trough as by inserting a pen in said trough opens said switch and de-energizes said bulb.



3. A lighted notepaper holder comprising:

(a) a frame defining a notepaper tray;

(b) said frame having a body, and a head end with a lower portion defining a battery compartment and a removable cap over said battery compartment;

(c) said cap housing illumination means powered by batteries in said battery compartment to illuminate paper in said tray;

(d) a removable translucent panel captured between said cap and lower portion of said head end defining said battery compartment, said panel being disposed between said lighting means and said notepaper tray to diffuse light from said lighting means onto said tray;

(e) the lower portion of said head end defining an upright panel having spaced cutaways therein and said removable cap has elongated depending detents which snap into engagement with said cutaways; and

(f) said head portion defining access openings adjacent said cutaway portions to enable said detents to be snapped out of engagement with said cutaways externally of said frame to release said cap to provide battery access.

4,564,888

WALL-WASH LIGHTING FIXTURE

Ian Lewin, Scottsdale; Richard V. Heinisch, Phoenix, and Arnold L. Tanunliong, Tempe, all of Ariz., assignors to Linear Lighting Corp., Long Island, N.Y.

Filed Nov. 28, 1984, Ser. No. 675,955

Int. Cl.[4] F21V *7/00*

U.S. Cl. 362—147 **12 Claims**

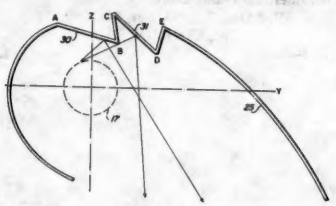
1. A lighting fixture for providing substantially uniform light distribution along a flat wall surface from an elongated lamp, including in combination:

a housing having an elongated light emitting opening of a predetermined length therein in a plane substantially perpendicular to the wall surface to be illuminated;

a reflector in said housing extending along said predetermined length of the opening therein and comprising first

and second end sections separated by and interconnected to a central section;

means for mounting an elongated lamp in said housing between said reflector and the opening in said housing, whereby said reflector directs light reflected from said lamp mounted in said housing outwardly through the



elongated opening in said housing toward the wall surface; and

wherein said central section of said reflector has portions thereof structured to direct a greater percentage of light from the lamp downwardly on the wall surface a greater distance than from said end sections.

4,564,889

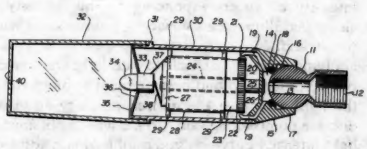
HYDRO-LIGHT

Frank J. Bolson, Rte. #1, Box 86-#6, Cottonwood, Calif. 96022

Continuation of Ser. No. 356,780, Nov. 10, 1982, abandoned. This application Jul. 10, 1984, Ser. No. 629,329

Int. Cl.[4] F21V *31/00*

U.S. Cl. 362—192 **1 Claim**



1. A hydro-light, comprising a main body having a substantially longitudinal axis and further having forward and rearward end portions, a pair of support webs within the body and constituting first and second support webs axially spaced relative to one another, an electrical generator including a stator mounted within the first and second support webs, the generator further including an armature within the stator, a vaned wheel in the main body rearwardly of the generator and arranged for driving the armature, means for accommodating water flow into the rearward end portion of the body, against the vaned wheel and axially of the body, and through the first and second support webs between the generator and the body, a third support web mounted substantially on the forward end portion of the body, the third support web including a reflector portion and having an opening therein for flow of water therethrough, a light bulb mounted in a socket on the reflector and connected to the generator, a substantially-cylindrical elongated lens cap mounted on the forward end portion of the body, and the lens cap having a substantially flat end wall provided with a plurality of apertures for flow of water therethrough, thereby providing a substantially fine spray illuminated by the light radiating from the bulb.

4,564,890

OUTDOOR LIGHTING FIXTURE USING U-SHAPED FLUORESCENT LAMP

David D. Poyer, 858 Roseway St., Naples, Fla. 33942

Filed Dec. 7, 1984, Ser. No. 679,551

Int. Cl.[4] F21S *5/00*

U.S. Cl. 362—216 **4 Claims**

1. A fluorescent lighting fixture for outdoor use comprising:

a cylindrical housing made entirely of polyvinyl chloride and having an upper end, a lower end and generally concentric inner and outer walls,

said housing having an annular ring projecting from its inner wall,

a fluorescent lamp assembly consisting of a U-shaped fluorescent lamp, a socket for said lamp, a circular base supporting said socket having upper and lower edges and having an outer diameter slightly less than the diameter of the inner wall of said housing, and a 120 volt transformer mounted on said base,

the lower edge of said assembly's base being mounted on the annular ring of said housing,

a bushing made entirely of polyvinyl chloride affixed to the lower end of said housing and having an axial hole through said housing,

a retaining ring having an upper face and a lower face with an outer diameter slightly less than the diameter of the inner wall of said housing mounted within said housing and resting on the upper edge of the assembly's base.

a closed-ended tubular transparent diffuser having a diameter somewhat less than the diameter of the inner wall of said housing resting on the upper face of said retaining ring, and

a pair of flexible O-rings each having an outer diameter slightly larger than the diameter of the inner wall of the housing and an inner diameter slightly less than the diameter of the outerface of said tubular diffuser,

each of said O-rings encircling said tubular diffuser and located within said housing for removably securing said diffuser to said housing.

4,564,891

VEHICLE HEADLIGHT

Hans Daumüller, Bodelshausen, and Heinz Ruckwied, Wankheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 1, 1985, Ser. No. 718,425

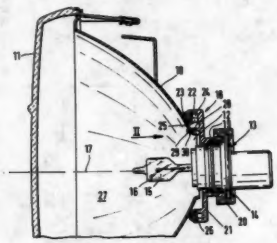
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1984, 8416804[U]

Int. Cl.[4] F21V *29/00*

U.S. Cl. 362—294 **6 Claims**

1. A headlight for motor vehicles, comprising a reflector with a protective lens; a lamp holder; and a bulb supported in said reflector by said lamp holder, said lamp holder having an outer flange secured to a backside of the reflector, said lamp holder being formed of plastics and having at least three locking arms for locking the lamp holder on said reflector, said locking arms extending approximately parallel to an axis of the reflector, each locking arm including a hook facing toward

said axis, said reflector being formed with at least three slots, each slot receiving an assigned arm and defining on said reflector a bearing surface having an insertion portion and an arresting portion, said insertion portion being closer to said axis than said arresting portion, each hook being engaged behind the arresting portion of a respective bearing surface to thereby press the lamp holder against said reflector.



4,564,892

APPARATUS FOR PRODUCING TWO MUTUALLY DIVERGENT LIGHT BEAMS

John A. Oram, Leighton Buzzard, England, assignor to J & D Oram Limited, Leighton Buzzard, England

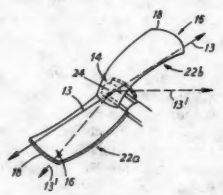
PCT No. PCT/GB83/00313, § 371 Date Jul. 31, 1984, § 102(e) Date Jul. 31, 1984, PCT Pub. No. WO84/02173, PCT Pub. Date Jun. 7, 1984

PCT Filed Dec. 1, 1983, Ser. No. 638,457

Claims priority, application United Kingdom, Dec. 1, 1982, 8234301

Int. Cl.⁴ F21V *7/02*

U.S. Cl. 362—297 **15 Claims**



1. A lamp unit for providing a patch of substantially shadow-free illumination at an image plane from a single light source, comprising two concave reflector portions each of which widens away from a respective beam-emission axis from a first end to a second end, at which second end is the beam-emitting aperture of the reflector portion, the two reflector portions confronting and overlapping each other at their first ends and having their beam-emission axes mutually divergent whereby a light source disposed between the overlapping regions of the reflector portions produces two mutually divergent beams, characterised in that each beam is convergent, and in that the lamp unit further comprises mirrors positioned to reflect respective ones of the beams to combine the beams at the image plane, lens systems arranged to focus the beams at the image plane, and a prism positioned in the path of one beam to redirect that beam so as to compensate for assymmetry between the beams and to bring the focused beams substantially into coincidence at the image plane.

4,564,893

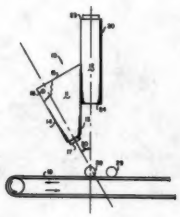
METHOD, APPARATUS AND PRODUCT FOR ILLUMINATING A SURFACE TO PROVIDE A DESIRED LIGHT INTENSITY AT DISCRETE POINTS ON SAID SURFACE

Nicholas M. Myrman, Rialto, Calif., assignor to Sunkist Growers, Inc., Sherman Oaks, Calif.

Filed Oct. 7, 1983, Ser. No. 540,126

Int. Cl.⁴ F21V *5/00*

U.S. Cl. 362—311 **13 Claims**



1. The method of illuminating a surface to provide a desired light intensity comprising:

a. positioning a single light source at a distance from said surface;

b. positioning a light transparent material, intermediate said light source and said surface;

c. illuminating said surface through said light transparent material;

d. measuring the light intensity at discrete points along the illuminated surface by means of a light sensing device being capable of sensing light intensity at discrete points along said surface said light sensing device being electronically connected to an oscilliscope and wherein a light intensity curve corresponding to the intensity of light along said illuminated surface is produced on said oscilliscope; and

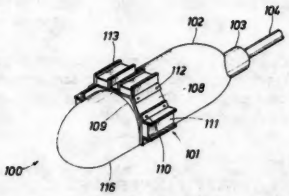
e. applying opaque materials to said light transparent material in response to said measurement to block out some of the light such that the desired intensity at each of said discrete points along said surface will be obtained and said light intensity curve on said oscilliscope is adjusted to the desired light intensity along said illuminated surface.

8. An apparatus for illuminating a surface with light of a desired intensity along the axis of said surface comprising a point light source at a distance from said surface and a light filter positioned intermediate said light source and said surface, said filter having opaque materials positioned thereon, said opaque materials having been selectively applied to a light transparent material to form said filter in response to measurement of light intensity at discrete points along said illuminated surface such that the desired intensity at each of said discrete points along said axis will be obtained, said opaque materials being opaque strips of equal width and being positioned on said light transparent material according to the formula:

$$d_n = \frac{W}{1 - \frac{T_n\,\%}{100}} + d_{n-1}$$

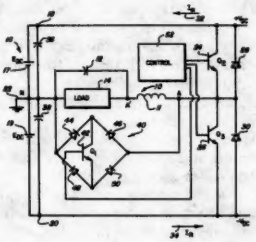
wherein d_n equals total distance of the center lines of said opaque strip to the center line of said filter; W equals the width of said opaque strips and $T_n\%$ equals the percent assigned light transmittance at such preselected points on said filter.

4,564,894
TROUBLE LIGHT FOR VEHICLES
Jorge Gonzalez, P.O. Box 3007, Laredo, Tex. 78044
Filed Dec. 12, 1984, Ser. No. 680,921
Int. Cl.[4] F21V 27/00
U.S. Cl. 362—398 2 Claims



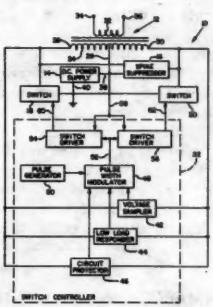
1. A bracket member for attaching to a light reflector comprising a member having an upper surface, an inner surface, and a pair of lower edges, said bracket member being of nonferromagnetic material and following substantially the contour of the reflector, said bracket member including a plurality of integral, flat, angular sections bent one with respect to the other and providing a corresponding plurality of flat upper surface sections on the bracket member, a heat shield strip of galvanized tin adapted to be interposed between the upper surface of the reflector and the inner surface of the bracket member and being of substantially the contour of the bracket member, the ends of the heat shield strip and the lower edges of the bracket member being adapted to be attached to the reflector, a plurality of permanent bar magnets of magnetized soft iron spaced about the upper surface of the bracket member along the flat sections thereof, and a corresponding plurality of ferromagnetic pairs of pole pieces for securing the magnets to the bracket member, each pair of pole pieces being associated with at least one of said magnets and being spaced, connected, and arranged about the upper surface of the bracket member along the flat sections thereof, each pole piece of each pair extending above the surface of the magnet associated therewith a distance approximately equal to the height of the magnet and also approximately equal to about one-half the width of the magnet thereby causing a reformation and intensification of the magnetic field in the area above the magnet and between the extensions of each of the pole piece pairs in order to increase the apparent strength of the magnets.

4,564,895
NEUTRALLY CLAMPED PWM HALF-BRIDGE INVERTER
Timothy F. Glennon, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.
Filed Sep. 12, 1983, Ser. No. 531,037
Int. Cl.[4] H02M 7/797
U.S. Cl. 363—41 2 Claims



1. In a pulse width modulated inverter having a DC source with positive and negative terminals and a neutral center tap,
first and second switches connected in series between said terminals and having a junction between the switches, and a filter connected from said junction to said neutral center tap, a load being connectable to the filter, the improvement comprising:
a bidirectional switch connected across said filter from said junction to said neutral center tap; and
means for controlling conduction of said first, second and bidirectional switches, the first and second switches conducting for alternate half cycles with a pulse width modulated on and off waveform, and said bidirectional switch conducting only when said first and second switches are both off to clamp said junction to said neutral center tap for current flow of either direction in the load.

4,564,896
INVERTER WITH IMPROVED OPERATING EFFICIENCIES
Steven C. Akerson, Federal Way, Wash., assignor to Heart Interface Corporation, Federal Way, Wash.
Filed Jun. 29, 1984, Ser. No. 626,318
Int. Cl.[4] H02H 7/122
U.S. Cl. 363—56 14 Claims

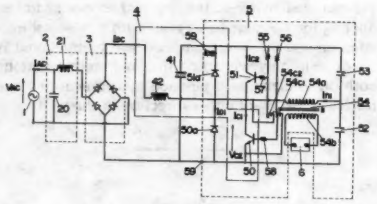


1. An inverter circuit usable with a DC power supply having a pair of terminals comprising,
a transformer having a primary coil with a center tap and two end taps, and a secondary coil, said center tap being connectible to one of the power supply terminals,
switch means, including Darlington transistor means connected in parallel with discrete transistor means, each transistor means having collector, emitter and base terminals, responsive to a switch control signal, operatively connected to each primary end tap and connectible to the other power supply terminal for selectively alternately connecting each primary end tap to the other power supply terminal, wherein each switch means further includes current divider means operatively connected between the respective base terminals of said Darlington and discrete transistor means operative to apportion the switch control signal current flow between the two types of transistor means in such a manner that said discrete transistor means predominantly conducts during low level load current flow through the associated primary coil end tap and said Darlington transistor means predominantly conducts during high level load current flow, and
switch controller means responsive to a representation of the voltage on the secondary coil for generating the switch control signal for each switch means.

4,564,897
POWER SOURCE

Futoshi Okamoto, Hirakata, and Masataka Mitani, Tsuzuki, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Dec. 30, 1983, Ser. No. 566,986
Claims priority, application Japan, Jan. 14, 1983, 58-4983
Int. Cl.[4] H02M *7/537*
U.S. Cl. 363—132 **4 Claims**

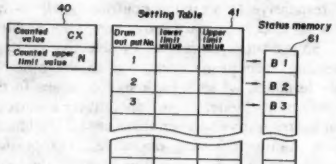


1. A power source comprising:
a full-wave rectifier to provide a pulsating dc voltage output from an input ac voltage;
a smoothing circuit for receiving the rectifier output to provide a dc voltage output with a reduced ripple;
an inverter including switching means for switching the dc voltage output from said smoothing circuit to provide a high frequency voltage to be applied to a load to be driven thereby;
said smoothing circuit comprising a smoothing capacitor, and charge storage means, comprising an inductor means and the switching means, said switching means being included in said inverter and said charge storage means, whereby when the switching means is switched on the inductor means is supplied from current flowing therein with electromagnetic energy which is in turn stored in the capacitor when said switching means is switched off, a resulting voltage developed across the capacitor being applied to input terminals of the inverter.

4,564,898
PROGRAMMABLE CONTROLLER HAVING A DRUM TYPE SEQUENCER FUNCTION SUBJECT TO PROGRAMMING

Satoshi Yano, Hirakata, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jun. 23, 1983, Ser. No. 507,003
Claims priority, application Japan, Jun. 25, 1982, 57-109443; Oct. 22, 1982, 57-185471
Int. Cl.[4] G06F *15/46*; G05B *11/01*
U.S. Cl. 364—140 **3 Claims**

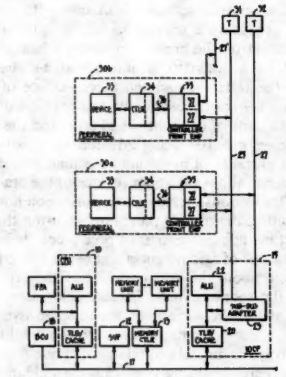


1. A programmable controller, including a memory for storing a user program, comprising:
counter means freely controlled by said user program;
a status memory which can be be freely read in a unit of at least one bit in accordance with said user program;
a set value table in which data showing numeric range is stored in an area corresponding to each bit of said status memory;
input means for writing data in said numeric range into said set value table;
comparison means which when a command related to said counter means in the user program is executed, successively compares a counted value of said counter means with data of each numeric range in said set value table to judge whether or not said counted value is within the stored numeric range; and
status update means for determining the logic of each bit of said status memory corresponding to data in each numeric range in accordance with the result of the judgement of said comparison means.

4,564,899
I/O CHANNEL BUS

Kenneth Holly, San Jose, and Gehrard J. Smith, Santa Clara, both of Calif., assignors to Elxsi, San Jose, Calif.

Filed Sep. 28, 1982, Ser. No. 426,045
Int. Cl.[4] G06F *3/00*
U.S. Cl. 364—200 **23 Claims**



1. A data communication system comprising:
a plurality of up to N devices, each having an associated unit number;
a channel processor;
a data bus consisting of a first set of lines;
a tag bus consisting of a second set of lines, signals on which are capable of defining at least a plurality of n bus activity codes, each of which specifies a corresponding one of a plurality of n data transfer operations, with n less than N;
means, associated with said channel processor, for coupling said channel processor to said data bus and to said tag bus;
means, associated with each device, for coupling the associated device to said data bus and to said tag bus;
clock means for defining bus cycles of predetermined duration to effect synchronous operation of said channel processor and said devices with respect to signals appearing on said data bus and said tag bus;
means for communicating request signals from said devices to said channel processor;
a transfer channel register, associated with each device, capable assuming at least (n+1) states, with n of said states being attached states, signifying that the associated device is attached to a corresponding one of n logical transfer channels, each of which corresponds to one of the n data transfer operations, and at least one of said states being a detached state signifying that the associated device is not attached to any of the transfer channels;
attach/detach means for attaching a transfer channel to any

given device in response to a request signal from the given device to said channel processor, and for detaching the transfer channel from a given device, including

means for setting the transfer channel register associated with the given device to one of the attached states to attach the transfer channel and to the detached state to detach the transfer channel; and

means for effecting at least a part of a desired data transfer operation between said channel processor and a device that is attached to one of the n transfer channels, including means, associated with said channel processor, for placing the bus activity code that corresponds to the desired data transfer operation on said tag bus, and

means, associated with each device, responsive to the occurrence on said tag bus of an activity code corresponding to the data transfer operation, for determining whether there exists a correspondence between the data transfer operation and the state of the associated device's transfer channel register and for allowing the associated device to transfer data between the data bus and the associated device during a predetermined number of bus cycles following the determination that there exists such a correspondence.

4,564,900

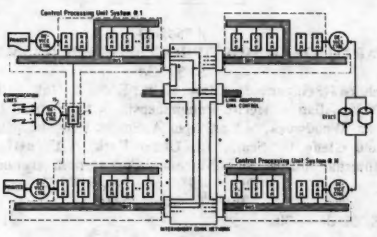
MULTIPROCESSOR COMPUTER SYSTEM

Asbjorn Smitt, Vedbaek, Denmark, assignor to Christian Rovsing A/S, Ballerup, Denmark

Continuation of Ser. No. 303,514, Sep. 18, 1981, abandoned. This application Feb. 10, 1984, Ser. No. 579,435

Int. Cl.⁴ G06F *13/00*

U.S. Cl. 364—200 **30 Claims**



1. A multiprocessing computer system comprising:

(A) a plurality of central processing systems, each system including

(a) at least one central processing unit for processing data in response to instructions and having the capability to produce address source information,

(b) memory means for storing data,

(c) bus means for transferring data between said at least one central processing unit and said memory means,

(d) intermemory link adaptor means connected to said bus means for transporting data externally of said central processing system; and

(e) DMA means associated with said intermemory link adaptor means for producing address source information and for controlling transfers of data via said intermemory link adaptor means and said bus means to and from said memory means without intervention by said at least one central processor unit,

(B) at least a portion of said memory means defining a common memory having separate port means for connecting via respective bus means at least two of said plurality of central processing systems, said separate port means causing said common memory to be shared by the two central processing systems;

(C) at least part of said common memory being compartmentalized and divided into a number of separate memory compartments wherein each of said memory compartments is coupled to a respective data transfer port and to said respective bus means of at least two of said plurality of central processing systems;

(D) at least one peripheral device controller means associated with at least one of said plurality of central processing systems and being adapted for connection with a peripheral device, each said peripheral device controller means being connected to a preselected memory compartment of said common memory via the data transfer port associated with said preselected memory compartment, said peripheral device controller means having means for producing and means for responding to address source information and means for controlling the transfer data between said peripheral device and the preselected memory compartment of said common memory;

(E) an intermemory communication network comprising a plurality of intermemory link means for connection with said intermemory link adaptor means of said plurality of central processing systems and for transferring data among said memory means of respective ones of said plurality of central processing systems; and

(F) DMA interface controller means connected to said intermemory communication network via said intermemory link adaptor means, said DMA interface controller means for controlling access to said memory of each of said plurality of central processing systems via said DMA means, said DMA interface controller means multiplexing transfers of data over said intermemory communication network, said DMA interface controller means being further operative to effect logical connection of at least two intermemory link adaptor means of respective ones of said central processing systems to said intermemory communication network in response to said address source information and to multiplex transfers of data among said memory means of the respective central processing systems over said intermemory communication network without intervention by said associated central processing unit.

4,564,901

METHOD OF PERFORMING A SEQUENCE OF RELATED ACTIVITIES VIA MULTIPLE ASYNCHRONOUSLY INTERCOUPLED DIGITAL PROCESSORS

Christopher J. Tomlinson, Encinitas, and Howard H. Green, San Diego, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jul. 21, 1983, Ser. No. 515,852

Int. Cl.⁴ G06F *9/42, 9/46, 15/16*

U.S. Cl. 364—200 **10 Claims**

1. A method of performing a task as a sequence of called activities in multiple digital processors which operate asynchronously to each other; said method including the steps of:

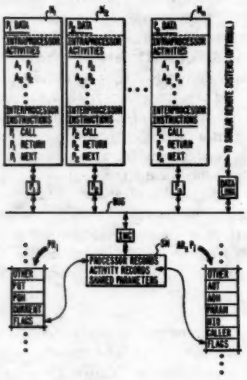
executing a portion of a first activity of said sequence in a first processor, said portion including and ending with an INTERPROCESSOR CALL instruction;

suspending execution of the first activity in response to said INTERPROCESSOR CALL and signaling a second processor that a second activity has been called by the first activity;

completely executing the second activity in the second processor in response to said INTERPROCESSOR CALL and further executing an INTERPROCESSOR NEXT instruction which references a third activity in a third processor;

signaling the third processor in response to said INTERPROCESSOR NEXT instruction that said third activity has been called not by said second activity but by whatever activity happened to call the second activity; and

completely executing said third activity in said third processor and, upon completion thereof, signaling said third



activity's apparent caller as indicated by said INTERPROCESSOR NEXT instruction, to resume execution.

4,564,902

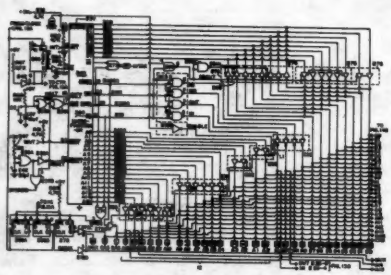
COMPUTER

Steven Leininger, Arlington, Tex., assignor to Tandy Corporation, Fort Worth, Tex.

Continuation of Ser. No. 466,207, Feb. 14, 1983, abandoned, which is a continuation of Ser. No. 168,427, Jul. 10, 1980, abandoned, which is a division of Ser. No. 926,957, Jul. 21, 1978, abandoned. This application Nov. 19, 1984, Ser. No. 672,892

Int. Cl.[4] G06F *1/00*

U.S. Cl. 364—200 **1 Claim**



1. A computer system having a central processing unit comprising a microprocessor chip including an interrupt input, a reset input, and a halt output, means for storing instructions, a random access memory, keyboard means, and display means,

a manual reset switch comprising a momentary switch which when operated, interrupts the central processing unit, resetting said unit to a predetermined address and when released, enables operation of the central processing unit,

means coupling the reset switch to the interrupt input of the microprocessor chip,

a power-up reset circuit, coupled to the reset input, for resetting the microprocessor chip to a preselected address which is different than the predetermined address,

a power terminal,

said power-up reset circuit including a charging circuit and a logic gate connecting between the power terminal and the reset input of the microprocessor chip,

gate means responsive to both said power-up reset circuit and said manual reset switch for providing a system reset signal,

said means coupling the reset switch to the interrupt input of the microprocessor chip comprising a logic circuit including OR gate means having two inputs and an output,

a means connecting the reset switch to one input of the OR gate means,

means connecting the halt output to the other input of the OR gate means,

and means connecting the output of the OR gate means to said interrupt input,

said preselected address having a lower address than said predetermined address,

said charging circuit including a resistor and capacitor in series and with the logic gate having its input connected to the node between the resistor and capacitor,

said logic circuit further including a charging means including a capacitor and resistor connected in series, one side of said momentary switch being coupled to the node between the capacitor and resistor, said switch open to permit the capacitor to be in a charged state and operated to a closed position to discharge the capacitor for resetting to said preselected address,

said halt output from the microprocessor chip having opposite bistable states and in which in accordance with one state, under a malfunction condition associated with the system, there is a disabling of said OR gate means so that operation of the reset switch is ineffective in resetting the microprocessor chip.

4,564,903

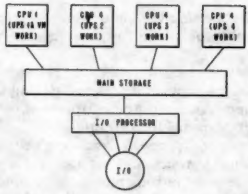
PARTITIONED MULTIPROCESSOR PROGRAMMING SYSTEM

Richard R. Guyette, San Jose, Calif.; Eddie T. Hall, Millbrook, N.Y.; Allan S. Meritt, Poughkeepsie, N.Y.; Stephen R. Newson, Woodstock, N.Y.; Casper A. Scalzi, Poughkeepsie, N.Y., and Glenn W. Sears, Jr., Ulster Park, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 5, 1983, Ser. No. 539,762

Int. Cl.[4] G06F *15/16*

U.S. Cl. 364—300 **21 Claims**



1. A control method for a multiprocessor (MP) system having plural CPUs sharing a main storage (MS) and I/O processing means for connecting a plurality of I/O devices to MS, the control method enabling the MP to execute a uniprocessor programming system (UPS) simultaneously on plural CPUs in the MP, even though the UPS is designed to only execute on a uniprocessor (UP) system having the same or a different architecture than the MP, the MP control method comprising:

having plural copies of the UPS in the MS, each copy of the UPS containing an identical set of UPS addresses within a range from UPS address zero to a maximum UPS address determined by the number n of bit positions in each address programmed into the UPS, and n being the order of the highest-order bit position in any explicit UPS address,

locating a different UPS copy boundary for the UPS address zero of each of the plural copies of the UPS, the UPS copy

boundaries being different multiples of 2^n bytes at different boundary MS absolute addresses,

executing a plurality of UPS guests simultaneously on different CPUs in the MP under control of a MP control program executable in all CPUs of the MP as a system host, the UPS guests using UPS programs fetchable from the respective UPS copies in MS for execution on the CPUs in the MP,

providing shareability of the I/O devices for the plurality of UPS guests through a set of shared physical paths.

4,564,904

ELECTRONIC CASH REGISTER

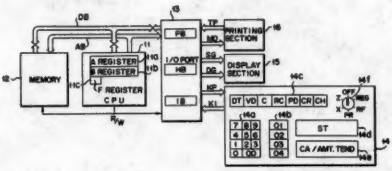
Akira Kumagai, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 496,332, May 20, 1983, abandoned, which is a continuation of Ser. No. 184,387, Sep. 5, 1980, abandoned. This application Jan. 11, 1985, Ser. No. 690,817

Claims priority, application Japan, Sep. 10, 1979, 54-115888; Nov. 1, 1979, 54-141823

Int. Cl.[4] G06F *15/21*

U.S. Cl. 364—405 **12 Claims**



1. In an electronic cash register having settlement operation functions, the improvement comprising the combination of:

input means including a data input key and a settlement designation key for designating a settlement operation;

central processing means coupled to said input means;

first memory means coupled to said central processing means and having a plurality of memory places for storing accumulated sales amounts based on given classifications when said data input key is operated, the contents of said first memory means being independently cleared after being read therefrom when said settlement designation key is operated;

second memory means coupled to said central processing means and having a plurality of memory places for storing data, which is accumulated for each of said classifications after being read from said first memory means, the number of said memory places of said second memory means being equal to that of the memory places of said first memory means;

printing means coupled to said central processing means for printing data read from said first memory means; and

start data storing means coupled to said central processing means for storing start data representing a start point of a settlement operation for said second memory means;

said central processing means including:

means for accumulating the contents of said first memory means into the contents of said second memory means for each classification responsive to operation of said settlement designation key for said first memory means and, at the same time, for causing printing out by said printing means of the contents of said first memory means as settlement data;

judging means for, when said settlement designation key is operated to designate said settlement operation for said first memory means, judging, based at least on the contents of said start data storing means, whether or not a start point of the settlement operation for said second memory means is reached; and

means responsive to said judging means for clearing, during a settlement operation, the contents of said second memory means, independent of clearing of said first memory means, upon completion of supplying the contents of said second memory means to said printing means when said judging means judges that the start point of a settlement operation has been reached.

4,564,905

TRIP COMPUTER FOR VEHICLES

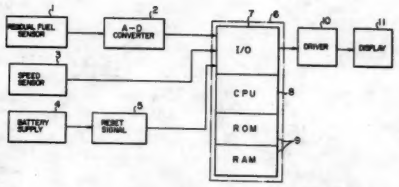
Mitsuhiro Masuda; Shotaro Naito; Keiichi Tokuyama, and Shizuhisa Watanabe, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 17, 1983, Ser. No. 505,440

Claims priority, application Japan, Jun. 18, 1982, 57-103853

Int. Cl.[4] G06F *15/50*

U.S. Cl. 364—424 **3 Claims**



2. A trip computer for displaying a possible travel distance of a vehicle on the basis of residual fuel quantity comprising:

a vehicle speed sensor for sensing the speed of a vehicle;

a residual fuel sensor for sensing the residual amount of fuel remaining in the fuel tank of a vehicle;

display means responsive to a display signal for displaying a possible travel distance of said vehicle;

a microcomputer system for receiving output signals from said sensors to generate said display signal for causing said display means to display the possible travel distance of said vehicle based on said sensed residual amount of fuel; and

a power supply sensor for generating an output signal upon sensing the connection of a power source to said microcomputer;

said microcomputer system including:

a read only memory (ROM) for storing a control program;

a random access memory (RAM) for temporarily storing necessary data;

a central processing unit (CPU) for using the data stored in said RAM to perform computational operations in accordance with said control program stored in said ROM; and

an input/output unit (I/O) electrically connected to said sensors for inputting the output signals from said sensors as converted data signals to said CPU and generating said display signal in accordance with an output signal from said CPU,

whereby said microcomputer system computes the possible travel distance of said vehicle by the steps of:

setting a predetermined initial gas mileage in said RAM in response to the output signal from said power supply sensor at the time of connection of said power source to said microcomputer system;

counting speed pulses from said vehicle speed sensor for computing a distance traveled by said vehicle and storing said computed distance in said RAM;

computing said possible travel distance in accordance with said gas mileage stored in said RAM and the output signal from said residual fuel sensor;

computing an amount of fuel consumed from the output of said residual fuel sensor; and

computing the gas mileage of said vehicle from said computed traveled distance and consumed fuel amount and replacing said set initial gas mileage in said RAM with said computed gas mileage only on the condition that said

computed traveled distance exceeds a predetermined value.

4,564,906

DEVICE FOR ALTERING GEAR-SHIFTING SEQUENCE IN RELATION TO VEHICLE LOAD

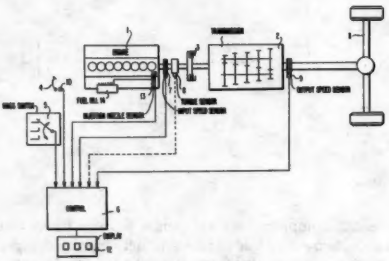
Wolfgang Stephan, Weinstadt, and Heinz Rieker, Waldenbuch, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 12, 1982, Ser. No. 338,862

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1981, 3101056

Int. Cl.⁴ F16H *5/66*; B60K *41/08*

U.S. Cl. 364—424.1 **2 Claims**



1. In an engine-driven vehicle in which a transmission having graduated gear ratios couples the engine and a traction system thereof to drive the vehicle along a road, the improvement comprising:

a device for producing gear-shifting signals for use and effecting, manually or automatically, a gear change in the transmission, said device including:

sensing means for sensing operating parameters including engine and vehicle speed,

control means responsive to said sensing means for determining the time instance of producing said gear-shifting signals during operation of the vehicle, and

manual switch means operable by a driver of the vehicle for supplying a mass signal to said control means for altering the operation of said transmission to account for ascending and descending gradients of the road according to the mass of the vehicle, said mass signal being representative of vehicle load.

4,564,907

ELECTRONIC CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Yasunori Mouri, and Osamu Abe, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 26, 1982, Ser. No. 371,574

Claims priority, application Japan, Apr. 30, 1981, 56-66371

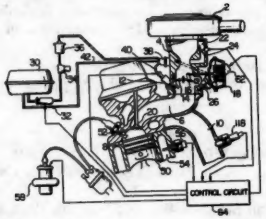
Int. Cl.⁴ G05B *15/02*; F02M *51/00*

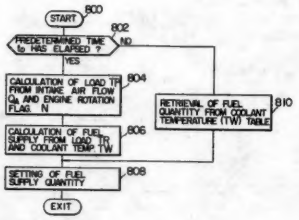
U.S. Cl. 364—431.10 **12 Claims**

7. In a method for controlling an internal combustion engine in which a quantity of intake air fed to engine cylinders is detected by processing an output signal produced by an air flow sensor incorporating a heat generating element and in which an optimal quantity of fuel corresponding to the detected intake air quantity is supplied to the internal combustion engine, wherein said air flow sensor will produce output signals which do not accurately correspond to the actual intake air quantity when said heat generating element has a temperature below a predetermined minimum operating temperature, a correction method comprising:

detecting that a predetermined time has elapsed from a time point at which a switch of said internal combustion engine is closed to electrically energize said heat generating element until a time point at which said heat generating element is heated to reach said predetermined minimum operating temperature; and

controlling the optimal quantity of fuel supplied to said internal combustion engine in dependence on another





control factor without making use of said output signal produced from said air flow sensor incorporating said heat generating element until it has been detected that said predetermined time has elapsed.

4,564,908

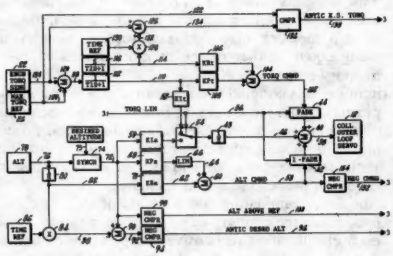
AUTOMATIC LIMITING OF HELICOPTER ENGINE TORQUE

Douglas H. Clelford, Trumbull; Joseph P. Skonieczny, Madison, and Richard D. Murphy, Trumbull, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 28, 1983, Ser. No. 470,368

Int. Cl.⁴ G06F *15/50*

U.S. Cl. 364—433 **5 Claims**



1. A torque limiting altitude control system for a helicopter, comprising:

collective pitch servo means (12) for controlling the collective pitch of the helicopter main rotor blades in response to a collective command signal;

sensor means (78) for providing an actual altitude signal indicative of the current actual altitude;

reference means (75) for providing an altitude reference signal indicative of a currently desired altitude;

synchronizer means (74) for providing an altitude error signal indicative of the difference between said actual altitude signal and said altitude reference signal;

means (60,66,68,70,80) for providing an altitude command signal indicative of the difference between a function of said altitude error signal and a function of the rate of change of said actual altitude signal;

sensor means (22) for providing an actual torque signal indicative of the current actual engine torque;

reference means (26) for providing a torque reference signal indicative of the maximum design operating torque for the engine;

difference means (120) for providing a torque error signal indicative of the difference between said actual torque signal and said torque reference signal;

means (104,106,108,112,116) for providing a torque command signal indicative of the difference between a function of said torque error signal and a function of the rate of change of said actual torque signal;

means (116,126,128,130,136) for providing an excess torque signal indicative of an excessive engine torque condition;

logic means (140) for providing a torque limiting signal in response to the provision of said excess torque signal, and for discontinuing said torque limiting signal in response to said altitude command signal being negative;

means (54) for providing an integral collective signal in response to a function of said torque error signal in said presence of said torque limiting signal, and for providing said integral collective signal as a function of said altitude error signal in the absence of said torque limiting signal;

summing means (40) for providing said collective command signal as the sum of the integral collective signal and two other signals;

first fade means (44) for fading in said torque command signal as one of said two other signals to said summing means so as to reduce said collective command signal in response to the provision of said torque limiting signal, and for fading out said torque command signal as the one of said two other signals to said summing means so as to increase said collective command signal in response to the discontinuation of said torque limiting signal; and

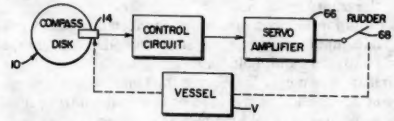
second fade means (42) for fading out said altitude command signal as the other of said two other signals to said summing means so as to reduce said collective command signal in response to the provision of said torque limiting signal, and for fading in said altitude command signal as the other of said two other signals to said summing means so as to increase said collective command signal in response to the discontinuation of said torque limiting signal.

4,564,909

ERROR SENSING SYSTEM FOR VESSELS WITH ABSOLUTE ZERO REFERENCING

Melvin G. Kramer, Riverton, Wyo., assignor to The Brunton Company, Riverton, Wyo.

Filed Oct. 31, 1983, Ser. No. 547,028
Int. Cl.[4] G05D *1/00*
U.S. Cl. 364—457 15 Claims



6. In an autopilot system for automatic steering of marine craft wherein an aperture plate is associated with a compass disk to sense the relative movement between said disk and said plate in response to changes in the heading of said craft with respect to North, the improvement comprising:

a first direction error track on said compass disk having opaque and transparent areas defining a zero reference area therebetween;

a second magnitude error track on said compass disk having a second zero reference position thereon aligned in predetermined relation to said first zero reference position, and light control means extending along said second track away from said second zero reference position;

said aperture plate having first and second light sensing means aligned with said first and second tracks, respectively, said first light sensing means generating a direction error signal in response to relative movement between said aperture plate and said disk, and said second light sensing means operative to generate a magnitude error signal in response to relative movement between said aperture plate and said disk; and

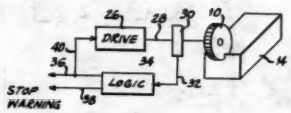
control circuit means operative in response to simultaneous generation of direction error and magnitude error signals by said light sensing means to produce a correctional signal to modify the heading of said vessel until said light sensing means return into alignment with said reference positions.

4,564,910

METHOD AND ALGORITHMS THEREFORE FOR MONITORING THE PERFORMANCE OF A TOOL AND MODIFYING THE FEED RATE THEREOF

Stanley K. Smith, and Donald J. Rozsi, both of Fenton, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 25, 1983, Ser. No. 488,322
Int. Cl.[4] G06F *15/20;* G06G *7/48;* G01N *19/02*
U.S. Cl. 364—474 30 Claims



1. A method of monitoring the performance of a tool which moves relative to a workpiece through a cycle and controlling the feed rate between the tool and workpiece in response to the monitored performance of the tool comprising the steps of:

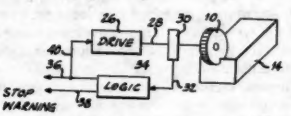
dividing said cycle into a plurality of increments:

4,564,911

METHOD OF MONITORING A CUTTING TOOL BY RECOGNIZING A SENSED DEVIATION IN A MATHEMATICALLY SMOOTHED FUNCTION OF FORCE

Stanley K. Smith; Donald J. Rozsi, both of Fenton, Mich., and Alvin M. Sabroff, Mentor, Ohio, assignors to Easton Corporation, Cleveland, Ohio

Filed Apr. 25, 1983, Ser. No. 488,327
Int. Cl.[4] G06F *15/20;* G06G *7/78;* G01M *19/02*
U.S. Cl. 364—474 27 Claims



1. A method of monitoring the performance of a tool which moves relative to a workpiece through a cycle comprising the steps of:

dividing said cycle into a plurality of increments;

sensing a function of the force applied to said tool during a plurality of said increments of said cycle;

mathematically smoothing said function of force sensed during said plurality of sensed increments of said cycle;

establishing a trend in the mathematically smoothed function of force for said plurality of sensed increments of said cycle;

determining whether the mathematically smoothed function of force for subsequently sensed increments of said cycle deviates substantially from the established trend in the mathematically smoothed function of force for previously sensed increments of said cycle; and

generating a first signal in response to sensing a substantial deviation in the mathematically smoothed function of force for subsequently sensed increments of said cycle from the established trend in the mathematically smoothed function of force for previously sensed increments of such cycle.

4,564,912

NUMERICAL CONTROL SYSTEM FOR DETERMINING TOOL WITHDRAWAL DIRECTION

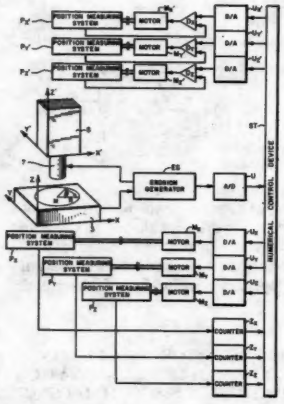
Ernst Schwefel, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Continuation of Ser. No. 471,439, Mar. 2, 1983, abandoned. This application Aug. 2, 1985, Ser. No. 762,801

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1982, 3208389

Int. Cl.[4] G06F *15/46;* **G05B** *19/18;* **B23K** *9/16*

U.S. Cl. 364—474 **13 Claims**



1. In a numerical control system for a processing machine; in which the processing machine comprises a tool, and means for holding a workpiece; and in which the control system comprises means for positioning one of the tool and the holding means with respect to the other of the tool and the holding means in at least two dimensions, and means for determining movements for the positioning means along a treatment path adapted to accomplish a desired treatment process at a treated surface of the workpiece; the improvement comprising:

first means for generating a separation signal indicative of a desired separation between the tool and the workpiece;

second means, included in the control system, for automatically determining in advance for each of a plurality of points along the path a respective withdrawal direction leading away from the treated surface of the workpiece, wherein at least some of the withdrawal directions are oriented nonparallel with respect to one another, wherein a plurality of said points are distributed along the length of the treatment path intermediate the ends of the treatment path, and wherein said plurality of points are arranged along the treatment path such that a respective one of the withdrawal directions is appropriate for each position of the tool with respect to the workpiece along the treatment path; and

third means, responsive to the separation signal and the direction determining means, for causing a selected one of the tool and the holding means to move along the respective previously determined withdrawal direction in response to the separation signal in order to protect the workpiece and the tool from excessively low separation between the tool and the workpiece during the treatment process.

4,564,913

FLEXIBLE TRANSFER MACHINE

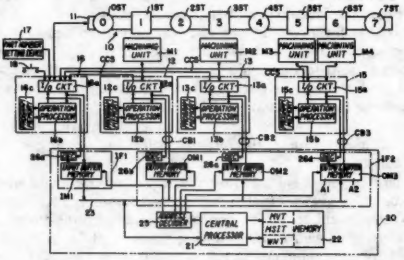
Toshihiko Yomogida, Kariya, and Tsuyoshi Yamashita, Nagoya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 16, 1984, Ser. No. 580,809

Claims priority, application Japan, Mar. 23, 1983, 58-48586

Int. Cl.[4] G06F *15/46;* **G05B** *19/417*

U.S. Cl. 364—474 **5 Claims**



1. A transfer machine comprising:

a transfer line for simultaneously transferring a plurality of workpieces therealong through one transfer pitch whenever operated;

a plurality of machining stations constituting parts of said transfer line and capable of holding workpieces thereon during machining operations;

a plurality of machining units associated with said machining stations for machining workpieces held on said machining stations, respectively;

a plurality of machine controllers respectively associated with said machining units and each capable of controlling the operation of the associated one of said machining units in accordance with one of machining programs, each of said machine controllers including a program memory for storing said machining programs;

a transfer controller connected to said transfer line for operating the same each time all of the machining units complete machining cycles;

workpiece data input means for inputting data representing the part number of an unfinished workpiece loaded onto the transfer line; and

a program selection controller connected to said workpiece data input means, said transfer controller and said machine controllers and including:

first storage means for storing the kinds of machining cycles in which each of workpieces is scheduled to be machined respectively at said machining stations;

second storage means for storing part numbers of the workpieces respectively held on said machining stations;

data rewriting means operable synchronously with the operation of said transfer line and based upon said data from said workpiece data input means for enabling said second storage means to renew said part numbers of the workpieces respectively held on said machining stations;

program search means for searching said second storage means for the kinds of said workpieces being respectively held on said machining stations and for searching said first storage means for the kinds of said machining cycles which are respectively to be effected on said workpieces identified by said searched kinds of workpieces; and

program designation means responsive to said searched kinds of machining cycles for designating to each of said machining controllers one of said machining programs which corresponds to one of said searched kinds of machining cycles.

4,564,914

METHOD FOR MACHINING THREE DIMENSIONAL CONTOURS UTILIZING A NUMERICALLY CONTROLLED LATHE

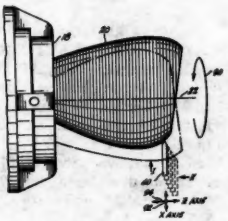
Douglas M. Ballough, Issaquah, and Howard L. Higginbotham, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

PCT No. PCT/US83/01160, § 371 Date Jul. 28, 1983, § 102(e) Date Jul. 28, 1983, PCT Pub. No. WO85/00067, PCT Pub. Date Feb. 14, 1985

PCT Filed Jul. 28, 1983, Ser. No. 523,197

Int. Cl.⁴ G05B *19/18*; G06F *15/46*

U.S. Cl. 364—475 **19 Claims**



1. A method for machining a workpiece comprising the steps of:

(a) providing a rotatable lathe spindle including means for mounting the workpiece thereto such that the workpiece may be rotated about a rotational axis;

(b) providing a cutting tool;

(c) positioning said cutting tool in response to control signals with respect to both a first axis perpendicular to the axis of rotation of the spindle mounted workpiece and a second axis parallel to the axis of rotation of the spindle mounted workpiece; and

(d) producing a predetermined set of control signals x, z, i and k for each predetermined segment of rotation of the workpiece, wherein each x control signal defines the position of the cutting tool in said first axis, each z control signal defines the position of the cutting tool in said second axis, each i control signal defines the distance traveled by the cutting tool in said first axis for each revolution of the workpiece and each k control signal defines the distance traveled by the cutting tool in said second axis for each revolution of the workpiece, said step (d) comprising the steps of:

(i) defining the desired machined shape of the workpiece in a Cartesian coordinate system using mutually orthogonal axes having corresponding coordinates X, Y and Z;

(ii) compensating said X, Y and Z coordinates for offsets produced by the cutting tool to produce coordinates x', y' and z;

(iii) converting said compensated x', y' coordinates to corresponding polar coordinates of radius R and angle θ;

(iv) defining a set of x coordinates, each x coordinate being predeterminedly related to one of said R coordinates;

(v) calculating a set of i coordinates, each i coordinate being a predetermined function of said R and θ coordinates;

(vi) calculating a set of k coordinates, each k coordinate being a predetermined function of said z and θ coordinates; and

(vii) producing said x, z, i and k control signals in response to said x, z, i and k coordinates, respectively.

4,564,915

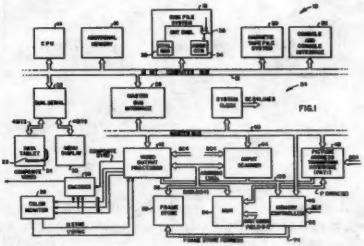
YIQ COMPUTER GRAPHICS SYSTEM

Lawrence J. Evans, Los Gatos; Junaid Sheikh, Fremont; Rodney D. Stock, Palo Alto, and Kenneth E. J. Turkowski, San Carlos, all of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 139,590, Apr. 11, 1980, abandoned. This application Mar. 1, 1982, Ser. No. 353,373

Int. Cl.⁴ G06F *3/153, 15/20*

U.S. Cl. 364—521 **37 Claims**



1. A video processing system for a computer graphics system comprising:

a frame store means storing video information for each pixel in a coordinate matrix of pixels for a visual display, the frame store means having a first component store storing intensity information for each pixel of the visual display with a given resolution and a second component store storing color defining information for two color components of the visual display which are defined at half as many pixels as are stored by the first component store, each stored pixel of color defining information for each of the two color components having the given resolution;

a memory controlling means coupled to receive visual display coordinate matrix information and address the frame store means in response thereto to produce selected read and write operations;

an interface circuit means coupled to transfer video information between a data processing system and addressed frame store means pixel storage locations, the interface circuit means being coupled to communicate data processing system produced coordinate matrix pixel address information to the memory controlling means and transfer video information with the frame store means at pixel locations identified thereby; and

a video output processing means coupled to provide coordinate matrix pixel address information to the memory controlling means in a sequence defining a raster scan video display and to receive color video display defining information from the frame store means in response thereto, the video output processing means including transformation circuitry for converting the video display defining information to at least one color output signal having a format that is acceptable by a video display device with the intensity of the color output signal being determined in response to data received from the first component store and the color content of the color output

signal being determined in response to data received from the second component store.

4,564,916

DIAGNOSING SPEED SENSOR DEFECT OF AN AUTOMOTIVE VEHICLE ELECTRONIC CONTROL SYSTEM

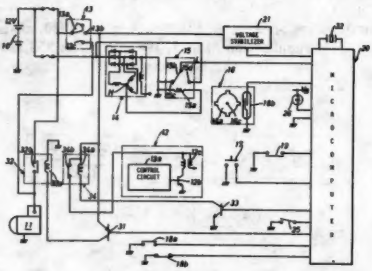
Shinichi Hori, Anjo; Yasuichi Ohnishi, Kariya; Masahiro Ueda, and Masahiko Noba, both of Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 27, 1982, Ser. No. 402,797

Claims priority, application Japan, Jul. 31, 1981, 56-121242

Int. Cl.[4] G08B *21/00, 29/00;* G06F *11/32*

U.S. Cl. 364—551 **7 Claims**



1. A diagnosis apparatus for detecting defects or malfunctions of a speed sensor assembly for use in combination with an automotive vehicle electric control system for controlling an operational state of said vehicle of an automotive vehicle, wherein said speed sensor assembly produces a speed signal which, when the vehicle is moving, includes a series of speed pulses indicative of movement of the vehicle to be applied to said electric control system, said diagnosis apparatus comprising:

means for operating said electric control system, during normal vehicle operation, responsive to speed pulses from said speed sensor assembly, including storing a level of said speed pulse signal and controlling said operational state based on comparisons of successive levels of said speed pulse signal with the stored level;

means for producing a diagnosis signal upon actuation thereof by a vehicle operator;

means responsive to said diagnosis signal for memorizing an instantaneous level of said speed pulse signal, comparing, following a memorization of said instantaneous level, successive levels of said speed pulses with the memorized level, and producing a first output signal when the successive levels of said speed pulses are the same as the memorized level and for producing a second output signal when the successive levels of said speed pulses are different from the memorized level;

means for indicating a defect or malfunction of said speed sensor assembly in response to said first output signal and indicating normal operation of said speed sensor assembly in response to said second output signal.

7. A method for diagnosing defects or malfunctions of a speed sensor assembly used in combination with an electric control system for controlling an operational state of an automotive vehicle, wherein said speed sensor assembly produces a speed signal which, when the vehicle is moving, includes a series of speed pulses indicative of movement of the vehicle to be applied to said electric control system, comprising the steps of:

operating said electric control system, during normal vehicle operation, responsive to speed pulses from said speed sensor assembly, including storing a level of said speed pulse signal and controlling said operational based on comparisons of successive levels of said speed pulse signal with the stored level;

to diagnose a speed sensor assembly malfunction, producing an electric diagnosis signal in response to a manual operation of a vehicle operator;

memorizing, in response to the diagnosis signal, an instantaneous level of the speed pulse signal;

comparing, following a memorization of an instantaneous level, successive levels of said speed pulses with the memorized level;

producing a first output signal when the successive levels of said speed pulses are the same as the memorized level and for producing a second output signal when the successive levels of said speed pulses are different from the memorized level;

indicating a defect or malfunction of said speed sensor assembly in response to said first output signal and indicating normal operation of said speed sensor assembly in response to said second output signal.

4,564,917

SPEED DISPLAY DEVICE FOR AUTOMOTIVE VEHICLE

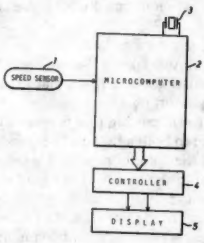
Motokazu Yamada, Nagoya; Hideyuki Hayakawa, Nishio; Tomonori Fukui, Kariya; Hajime Matsuhashi, Kariya; Yasuhiro Kaneko, Kariya; Motozo Ikeda, Kariya, and Tomihiko Nagata, Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 21, 1983, Ser. No. 515,874

Claims priority, application Japan, Jul. 29, 1982, 57-132821

Int. Cl.[4] G06F *3/14*

U.S. Cl. 364—565 **2 Claims**



1. A speed display device of the numerical display type for automotive vehicles, comprising speed detecting means for producing an electric speed signal indicative of the travel speed of the vehicle, and numberical display means responsive to said speed signal for providing a numerical display indicative of the travel speed of the vehicle,

wherein the improvement comprises:

memory means arranged to memorize a plurality of numerical display patterns for enlarging the size of said numerical display in accordance with rise of the speed level;

computer means responsive to said speed signal to select one of said memorized display patterns in accordance with the level of said speed signal and to produce an output signal indicative of a display data under said selected display pattern; and

means responsive to said output signal from said computer means for adjusting the size of said numerical display in dependence upon the value of said display data.

4,564,918

METHOD AND APPARATUS FOR MEASURING THE TIME DIFFERENCE BETWEEN TWO SAMPLING TIMES

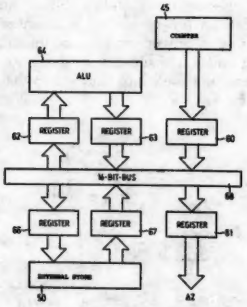
Guy W. W. McNally, Shere, England; Roger Lagadec, and Daniele P. C. Pelloni, both of Zurich, Switzerland, assignors to Willi Studer AG, Switzerland

Filed Jan. 21, 1983, Ser. No. 459,972

Claims priority, application Switzerland, Jan. 26, 1982, 476/82

Int. Cl.[4] G04F *10/00*

U.S. Cl. 364—569 22 Claims



11. A method for measuring the time difference between pulse edges of a first and second signal, each composed of a sequence of pulses, comprising the steps of

providing a sequence of equally spaced clock pulses, said clock pulses having a frequency which is substantially higher than the frequency of the pulse edges of said first and second signal and which is derived from the frequency of the pulse edges of the first signal,

counting clock pulses between the arrivals of successive pulse edges of the second signal, said successive pulse edges defining a period,

averaging the number of clock pulses counted during a plurality of periods to give an actual mean value,

accumulating two successive actual means values, and

subtracting an overflow from the accumulated actual mean values.

4,564,919

CORRELATION CALCULATING APPARATUS

Ken Utagawa, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 17, 1982, Ser. No. 450,785

Claims priority, application Japan, Dec. 22, 1981, 56-206092; Dec. 26, 1981, 56-209552; Feb. 27, 1982, 57-31329; Apr. 17, 1982, 56-63231

Int. Cl.[4] G06F *15/336*

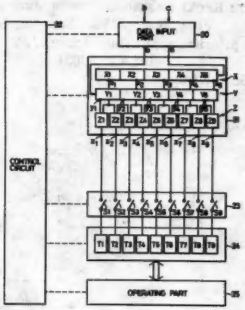
U.S. Cl. 364—728 12 Claims

1. An apparatus for determining correlation between first and second sets of data, wherein said first and second sets are respectively composed of plural data and have a corresponding relationship with each other, comprising:

(a) shift register means including a plurality of transfer stages to individually receive therein each said data, and transferring the data received in each of said transfer stages in succession to the subsequent transfer stage;

(b) input means for introducing each of the data in said first and second sets of data into said shift register means alternately relative to said first and second sets of data in synchronization with said transfer; and

(c) comparison means to mutually compare the data in a selected pair of transfer stages from among said plurality of transfer stages in shift register means, with none or an



even number of transfer stages being interposed between them.

4,564,920

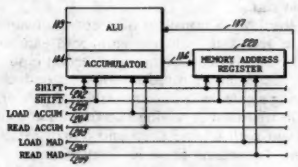
MULTIPLIER WITH HYBRID REGISTER

Willard S. Briggs, Carrollton, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Dec. 2, 1982, Ser. No. 446,104

Int. Cl.[4] G06F *7/52*

U.S. Cl. 364—757 2 Claims



1. An integrated-circuit central processing unit of a microcomputer comprising:

an arithmetic logic unit containing multiplier circuitry to perform a multiplication algorithm;

an accumulator register for storing a first portion of the product of a multiplication operation,

an extension register for storing a second portion of the product of a multiplication operation, said extension register being connected to said accumulator register;

means for shifting binary data from said accumulator into said extension register;

means for shifting data within said extension register;

means for loading and reading data in parallel into and out of said extension register, characterized in that:

said extension register is replaced by a second register that performs a second function independent of said multiplication operation, in addition to shifting and storing said second portion of said product and performs said second function as a component of a CPU block external to said multiplier circuitry;

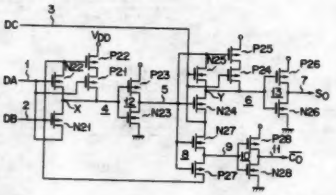
said means for shifting data is connected between said accumulator and said second register; and

said central processing unit includes means for loading and reading data in parallel into and out of said second register independently of the multiplication operation during periods when a multiplication operation is not in process.

4,564,921
FULL ADDER

Kazuo Suganuma, Yokohama, Japan, assignor to Tokyo Shibaura Kenki Kabushiki Kaisha, Japan

Filed Jun. 1, 1983, Ser. No. 499,872
Claims priority, application Japan, Jun. 3, 1982, 57-95395
Int. Cl.⁴ G05F *7/50*
U.S. Cl. 364—784 **2 Claims**



1. A full adder coupled to first and second power source terminals, having as inputs first through third input signals, and producing a sum signal and a carry signal, said adder comprising:

(a) first exclusive OR processing means receiving as inputs said first and second input signals, said first exclusive OR processing means including

(i) a first MOS transistor of a first channel type having a gate and a current path, said gate receiving said first input signal,

(ii) a second MOS transistor of said first channel type having a gate and a current path, said gate of said second MOS transistor receiving said second input signal and said current paths of said first and second transistors being connected in series between said first and second input signals,

(iii) a third MOS transistor of a second channel type having a gate and a current path, said gate of said third MOS transistor receiving said second input signal,

(iv) a fourth MOS transistor of a second channel type having a gate and a current path, said gate of said fourth MOS transistor receiving said first input signal and said current path of said third and fourth MOS transistors being connected in series between said first power source terminal and the interconnection of said first and second MOS transistors, and

(v) a first inverter including fifth and sixth MOS transistors each having a gate connected to said interconnection of said first and second MOS transistors, and said fifth and sixth MOS transistors each having a current path which are connected in series between said first power source terminal and said second power source terminal;

(b) second exclusive OR processing means receiving as inputs said third input signal and a signal at the interconnection of said fifth and sixth MOS transistors for producing said sum signal corresponding to the logical sum of said first, second, and third input signals; and

(c) means for selecting one of said second and third input signals according to said signal appearing at said interconnection of said fifth and sixth MOS transistors, thereby to produce said carry signal.

4,564,922
POSTAGE METER WITH POWER-FAILURE RESISTANT MEMORY

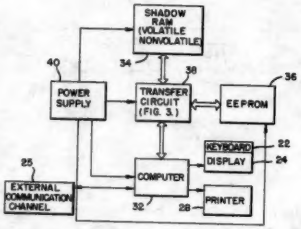
Arno Muller, Westport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 14, 1983, Ser. No. 542,225
Int. Cl.⁴ G06F *13/00, 7/04*
U.S. Cl. 364—900 **5 Claims**

1. In a postage meter incorporating a computer for the computation of available postage and a non-volatile electronically-programmable READ-ONLY memory (EEPROM) for the processing of data, a security system comprising:

a shadow RAM formed as a composite memory unit including a first section of storage cells structured as a volatile random-access memory (RAM) coupled to said computer for use in computations performed by said microprocessor, said composite memory unit including a second memory section structured as a non-volatile array of storage cells arranged in correspondence with cells of the RAM, said composite memory unit further comprising means responsive to strobe signals for simultaneously transferring data between corresponding cells of said first and said second sections for permanent storage of data of said RAM during a power outage and includes means for initializing said RAM subsequent to a power outage;

means for entering data into said shadow RAM and said EEPROM;



a transfer circuit including a detector of input power, said transfer circuit including strobe means responsive to a signal of said detector for strobing said composite memory unit and said computer; and wherein said data is transferred from said volatile section to said non-volatile section at the beginning of a power outage upon a first said strobe signal, and, upon a second said strobe signal appearing at power restoration, the data is recalled from said non-volatile section within said shadow RAM; wherein said computer will write data to be preserved into the said EEPROM at the beginning of a power outage upon said first strobe signal, and, upon power restore to ON will read the data from the EEPROM into a further RAM contained in said computer and said computer compares said portion of data in said further RAM with the corresponding data being stored in said shadow RAM.

4,564,923
INTERCONNECTABLE ELECTRONIC GAME APPARATUS

Harumi Nakano, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1981, Ser. No. 315,232
Claims priority, application Japan, Jul. 20, 1981, 56-113274
Int. Cl.⁴ G06F *9/00*
U.S. Cl. 364—900 **1 Claim**

1. An electronic game apparatus, comprising:

a keyboard section for entering data;

memory means for storing a game program;

processing means for decoding continuously the game program stored in said memory means according to the data entered from said keyboard section to implement game control data;

display means for displaying a condition representative of the game control data as implemented by said processing means;

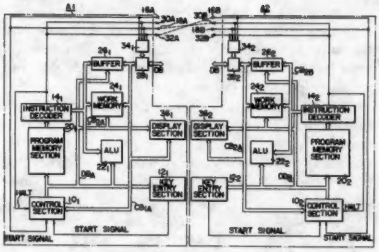
interconnect means connected to said processing means for interconnecting the electronic game apparatus with two or more other like electronic game apparatus;

said processing means being coupled to said interconnect

means and operating to control operations in the other like electronic game apparatus;

said processing means including signal transmission control means for sending control signals to the other like electronic game apparatus through said interconnect means based on decoding a signal transmission command in the game control data stored in said memory means, and for releasing the other like electronic game apparatus from a standby mode and transmitting data to the other like electronic game apparatus through said interconnect means; and signal reception control means for releasing the like electrical game apparatus from a standby mode when a control signal is inputted from the other like electronic game apparatus through said interconnect means, and for writing into said memory means data transmitted from the other like electronic game apparatus through said interconnect means;

said interconnect means consisting of a first pair of signal lines coupled to said processing means so that one of said first pair sends a control signal to another like electronic game apparatus and the other signal line of said first pair



sends a control signal to still another like electronic game apparatus when said signal transmission control means decodes said signal transmission command, and a second pair of signal lines coupled to said processing means so that one of said second pair receives said control signal from said other like electronic game apparatus and the other signal line of said second pair receives said control signal from said still another like electronic game apparatus when said signal reception control means decodes a signal reception command; and

a data bus line for transmitting data to the other like electronic game apparatus and for inputting data from the other like electronic game apparatus; and a connection circuit for connecting said first and second pairs of signal lines and said data bus line with said processing means;

said connection circuit of said interconnect means including a data transmission circuit for transmitting data from said processing means to the other like electronic game apparatus through said data bus line when said transmission control means operates, and for receiving data transmitted from the other like electronic game apparatus through said data bus line when said reception control means operates.

4,564,924

MEMORY MODULE WITH EXTRA SPACING BETWEEN REDUNDANT ROWS AND COLUMNS

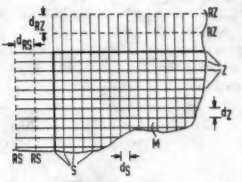
Hans Häusele, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 2, 1983, Ser. No. 500,333

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 3221268

Int. Cl.⁴ G11C *29/00, 5/02*

U.S. Cl. 365—200 **10 Claims**



1. Integrated memory module, comprising at least one normally addressable cell array with edges and a matrix of memory cells disposed in rows, said rows being equally spaced apart by a given distance, and redundant memory cells disposed in rows at said edges of said normally addressable cell array for connection instead of defective rows of memory cells in said normally addressable cell array, each one of said rows of redundant memory cells being spaced apart from each other and from each one of said rows of memory cells of said normally addressable cell array by distances being greater than said given distance.

4,564,925

SEMICONDUCTOR MEMORY

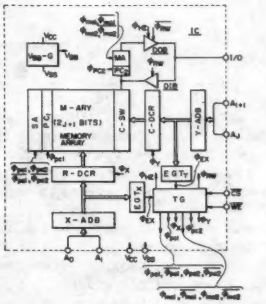
Yoshiaki Onishi, deceased, late of Kokubunji, Japan; by Junko Onishi, administratrix, Nagoya, Japan; Hiroshi Kawamoto, Kodaira, and Tokumasa Yasui, Higashiyamato, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 23, 1983, Ser. No. 535,056

Claims priority, application Japan, Sep. 24, 1982, 57-164831

Int. Cl.⁴ G11C *7/00*

U.S. Cl. 365—203 **9 Claims**



1. A semiconductor memory comprising:

a plurality of dynamic memory cells;

a first selector circuit which receives first address signals and which selects ones of said plurality of dynamic memory

cells specified by the first address signals, and the time of which is controlled by a first timing signal;

a plurality of pairs of data lines connected to said dynamic memory cells so that each pair of data lines is respectively provided with a potential difference in accordance with the data read out from a selected dynamic memory cell;

a plurality of sense amplifiers each of which has a pair of input and output terminals that are coupled to a corresponding pair of data lines, the respective sense amplifiers having their operations controlled by second timing signals;

a first precharge circuit which is coupled to said plurality of pairs of data lines and operates so as to precharge said data lines at a potential intermediate between binary signals to be stored in the dynamic memory cells in accordance with a third timing signal;

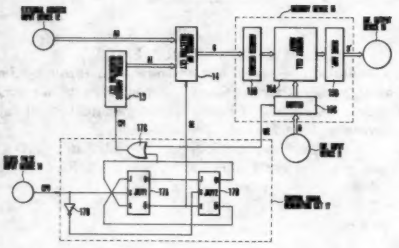
a first detector circuit including means connected to receive said first address signals for detecting level changes in the first address signals; and

a timing generator circuit connected to receive the detection outputs of said first detector circuit, and including means for generating said third timing signal for operating said first precharge circuit, said first timing signal for operating said first selector circuit after stopping the operation of said first precharge circuit, and said second timing signals for operating said sense amplifiers.

4,564,926
INFORMATION MEMORY DEVICE WITH ADDRESS MULTIPLEXING

Tadanobu Nikaido; Norio Miyahara, and Kanji Tawara, all of Tokyo, Japan, assignors to Nippon Telegraph & Teiephone Public Corporation, Japan

Filed Jun. 4, 1982, Ser. No. 385,163
Claims priority, application Japan, Jun. 9, 1981, 56-88375
Int. Cl.⁴ G11C *8/00, 7/00*
U.S. Cl. 365—230 **4 Claims**



1. An integrated memory device for a time switch comprising:

an external address input device for receiving external addresses from an external address source;

an internal address generator for sequentially generating internal addresses in response to address clock pulses;

an address selector for selecting one or the other of said internal and external addresses in response to a select signal to transmit the address selected as a selected address;

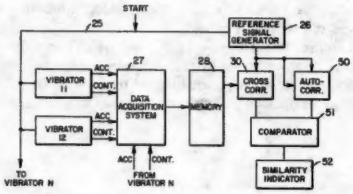
memory circuit means having a plurality of bit locations for storing information received from an external information source at a bit location designated by said selected address in response to a write signal and for reading out the information stored at said bit location designated by said selected address in response to a read signal; and

a control signal generator responsive to clock pulses having a predetermined period T received from an external clock, said control signal generator having first means for alternately generating said read and write signals, second means for generating said select signal in synchronization with a respective one of said read and write signals, and third means for generating said address clock pulses having a period two times said predetermined period T.

4,564,927
METHOD AND APPARATUS FOR TESTING SEISMIC VIBRATORS

Richard L. Kolb, Altadena, Calif., assignor to Crocker National Bank, Los Angeles, Calif.

Filed Mar. 10, 1982, Ser. No. 356,875
Int. Cl.⁴ G01V *1/24, 1/36*
U.S. Cl. 367—42 **12 Claims**



4. A method of seismic exploration wherein a plurality of vibrator sources are employed simultaneously to generate vibratory input signals each having a characteristic which varies as a function of time and wherein said signals are reflected and refracted to detector stations from subsurface beds, in which said sources are tested for signal accuracy comprising the steps of:

a. generating at a first location a system vibratory reference signal having a pattern of known phase and frequency characteristics,

b. generating at a vibrator source a signal representative of the output of said source,

c. cross-correlating said system reference signal with said signal representative of the output of said source to generate a cross-correlation function having a peak value representative of phase coherence,

d. establishing from said reference signal a correlation function having a peak value representative of maximum coherence,

e. comparing the peak value of said cross-correlation function with the peak value of said correlation function to obtain an indication of accuracy of said signal representative of source output,

f. comparing the time of occurrence of the peak value of the cross-correlation function and the time of occurence of the peak value of the correlation function to obtain an indication of time alignment of said signal representative of the output of said source, and

g. utilizing in exploration those sources tested having outputs whose degree of accuracy and time alignment are substantially the same.

4,564,928
GRAPHICAL DATA APPARATUS

William E. Glenn, Ft. Lauderdale, and John W. Marcinka, Lighthouse Point, both of Fla., assignors to New York Institute of Technology, Old Westbury, N.Y.

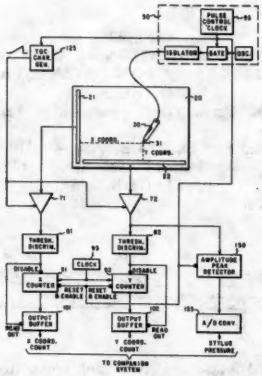
Filed Sep. 30, 1982, Ser. No. 430,253
Int. Cl.⁴ G06K *11/06;* **G08C** *21/00*
U.S. Cl. 367—117 **38 Claims**

1. Apparatus for position determination in a data space, comprising:

a generally flat tablet formed of a solid acoustically-conductive material;

a movable element adapted to be manually movable over the tablet surface, said element having a tapered tip which

contacts the surface of said tablet, said movable element having an acoustic transducer coupled to said tip;
fixed acoustic transducer means coupled to said tablet;
means for energizing compressional mode ultrasound energy to propagate in either direction between the transducer of said element and said fixed transducer means, the midrange



frequency of the energy being such that the wavelength of said compressional mode energy is about four times the thickness of said tablet; and
means for determining the time of propagation of said acoustic energy travelling, in either direction, between the transducer of said element and said fixed transducer means.

4,564,929

INFORMATION RECORDING AND REPRODUCING APPARATUS WITH TRACKING CONTROL BY SAMPLING

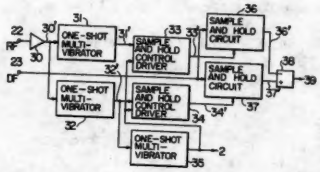
Seiji Yonezawa, Hachioji; Tatsuo Horikoshi, Toyokawa; Toshiaki Tsuyoshi, Kokubunji, and Wasao Takasugi, Higashiyamato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 23, 1982, Ser. No. 443,871

Claims priority, application Japan, Nov. 25, 1981, 56-187870; Aug. 16, 1982, 57-141121

Int. Cl.[4] G11B *7/08*

U.S. Cl. 369—44 **14 Claims**



9. An information recording and reproducing apparatus comprising:
an optical disc having pre-pits previously formed on a record medium in such a manner as to permit optical detection, said pre-pits forming a track in the rotation direction of said optical disc;
means for applying a light beam onto said optical disc through an optical system;
photo detecting means including a photoreceptive member for receiving said light beam reflected by said optical disc, said photoreceptive member being divided into four detection elements each disposed in the first to fourth quadrants defined by an origin coinciding with the light axis of said optical system, an axis in parallel with said track, and an axis perpendicular to said track;
first means for producing a difference signal representing the difference between a signal which is the sum of the output signal from the detection element in said first quadrant and the output signal from the detection element in said third quadrant and a signal which is the sum of the output signal from the detection element in said second quadrant and the output signal from the detection element in said fourth quadrant;
second means coupled to said first means, for sampling the level of said difference signal at the edges of said pre-pits;
third means for producing sampling pulse signals for controlling the sampling operation of said second means on the basis of the output signals of said photoreceptive member;
fourth means for generating a gate signal indicative of an area for recording information by using the output signals of said photoreceptive member within a time period during which said light beam is applied onto said area between one of said pre-pits and the succeeding pre-pit;
fifth means provided between said second and third means and further coupled to said fourth means, said fifth means being constructed so that the sampling pulse signals of said third means are not supplied to said second means within a time period during which said gate signal of said fourth means is generated;
sixth means for producing a tracking signal on the basis of the output of said second means, said tracking signal being used to track said pre-pits along said track;
seventh means coupled to said sixth means, for controlling, in response to said tracking signal the application position of said light beam so as to track said pre-pits along the track; and
eighth means for modulating said light beam by predetermined information within a time period during which said light beam is applied onto said area for recording information.

4,564,930

DISC CARRYING SYSTEM

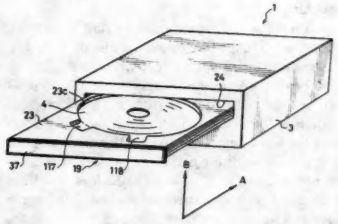
Tadashi Funabashi; Junji Takahashi, and Kyoichi Kato, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 19, 1983, Ser. No. 515,196

Claims priority, application Japan, Jul. 20, 1982, 57-109771[U]; Jul. 20, 1982, 57-109772[U]

Int. Cl.[4] G11B *1/00, 17/04, 25/04*

U.S. Cl. 369—75.2 **9 Claims**



1. A disc carrying system to be mounted in a housing of a front loading disc player for supporting a disc in an initial position and for moving said disc through an opening in said housing in a first predetermined direction and in a second predetermined direction perpendicular thereto, thereby carrying it to a final position located at a distance from the initial position, said system comprising:
(a) a tray which is slidably mounted for movement in said

first predetermined direction through a path defined by a pair of laterally spaced rails facing each other and which positions said disc to said final position;

(b) a plate formed on an end of said tray functioning as a lid for the aperture in said housing when said tray is enclosed in said housing;

(c) a disc-supporting container carried by said tray and which can protrude to the outside of said housing together with said tray and which supports the disc in cooperation with said tray;

(d) at least a pair of cam members carried by said tray and disposed on both sides of said tray, each of which cam members has a cam slot having edges which engage with engaging members carried by said container, said cam members being mounted for movement in said first predetermined direction with respect to said tray; and

(e) drive means for driving said cam members in said first predetermined direction, said cam slots being formed so as to move said container in said second predetermined direction perpendicular to said first predetermined direction with respect to said tray in association with the movement of said cam members by said drive means in said first predetermined direction.

4,564,931

OPTICAL RECORDING AND REPRODUCING HEAD

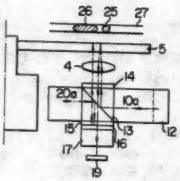
Shunji O'Hara, Higashiosaka; Tomio Yoshida, Katano; Isao Satoh, Neyagawa, and Kenji Koishi, Hyogo, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Jul. 13, 1983, Ser. No. 513,247

Claims priority, application Japan, Jul. 15, 1982, 57-123807; Jul. 15, 1982, 57-123809

Int. Cl.[4] G11B *7/12*

U.S. Cl. 369—110 **8 Claims**



1. An optical recording and reproducing head comprising:

a first light source emitting a first light beam having a first wavelength;

a second light source emitting a second light beam having a second wavelength different from said first wavelength;

a polarization beam splitter on which said first and second light beams are made incident from a first and second surfaces thereof different from each other;

a condenser lens adapted to condense on a recording medium the light emerging from a third surface of said polarization beam splitter different in direction from said first and second surfaces, as well as to lead the light reflected from said recording medium to the third surface of said polarization beam splitter;

a first quarter wave plate disposed between said condenser lens and the third surface of said polarization beam splitter;

a first filter that receives the light emerging from a fourth surface of said polarization beam splitter and transmits light having said first wavelength but reflects light having said second wavelength;

a second quarter wave plate disposed between the fourth surface of said polarization beam splitter and said first filter; and

a photodetector that receives the light passed through said first filter;

wherein said first and second light beams are condensed on positions on said recording medium close to each other, respectively, and substantially one of said first and second light beams reflected from said recording medium is led to said photo- detector.

4,564,932

METHOD OF FABRICATION OF A PROTECTED OPTICAL DISK AND A DISK OBTAINED BY SAID METHOD

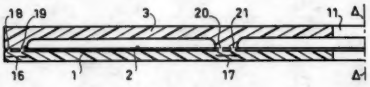
Francois Langé, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 26, 1983, Ser. No. 488,710

Claims priority, application France, Apr. 27, 1982, 82 07251

Int. Cl.[4] G11B *7/26*

U.S. Cl. 369—286 **8 Claims**



1. A protected optical disk comprising a protective casing of thermoplastic material, annular optically recordable structure enclosed in said casing; said casing being made of at least first and a second disk shaped member delimiting an annular chamber and assembled to each other with welded circular joints; said first disk shaped member having an annular recess in confronting relationship with said recordable structure and two ring shaped raised portions respectively inwardly and outwardly bounding said annular recess; said second disk shaped member mating said raised portions; said welded circular joints extending between said second disk shaped member and said ring shaped raised portions for sealing said casing; at least first and second of said welded circular joints being spaced and concentrically arranged on one side of the inner and outer sides of said annular recess; one of said disk shaped members having an inner flat face supporting said recordable structure; the radial spacing of said first and second welded circular joints lying in a range from 0.4 to 6 millimeters.

4,564,933

SUPERVISION OF DIGITAL TRANSMISSION SYSTEMS

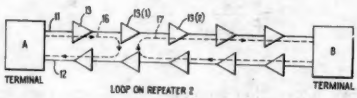
Ian J. Hirst, London, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 26, 1983, Ser. No. 526,728

Claims priority, application United Kingdom, Sep. 15, 1982, 8226315

Int. Cl.[4] H04J *1/16, 3/14;* H04B *3/46*

U.S. Cl. 370—15 **15 Claims**



1. A method of supervising a digital transmission system having two terminals interconnected by separate unidirectional paths, and at least one repeater interposed in and between said paths, comprising sending a loop-back signal for a loop-back condition from one of the terminals via one of the paths to the repeater and via the repeater and the other path back to the one terminal, sending a digital multi-bit test signal from the other terminal via the other path to the repeater, and controlling the mix of the bits of the test signal to change the loop-back condition in the repeater in such manner as to deter-

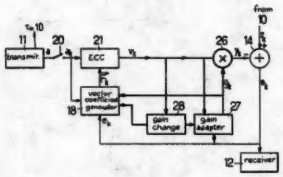
mine the test signal level in the repeater which caused the change.

4,564,934

ADAPTIVE ECHO CANCELLER WITH AGC FOR TRANSMISSION SYSTEMS

Odile Macchi, Orsay, France, assignor to Centre National de la Recherche, Paris, France

Filed Dec. 1, 1982, Ser. No. 446,062
Claims priority, application France, Dec. 3, 1981, 81 22671
Int. Cl.[4] H04B 3/20
U.S. Cl. 370—32 9 Claims



1. Echo canceller for cancelling an echo of an echo path in a full duplex communication system between two remote stations, said echo canceller comprising:

an adaptive digital filter, located at one of said stations, for receiving data sent from one of said stations to the echo path, said adaptive digital filter including a plurality of variable tap coefficients and being arranged to deliver a filtered signal representative of a said echo of said echo path;

automatic gain control means for receiving said filtered signal and for generating an estimated value of said echo;

subtraction means for receiving said estimated echo value and a signal from the other one of said stations through said echo path and for subtracting said estimated echo value from a composite signal includng said signal from the other one of said stations and noise due to said echo path;

and means for delivering the value of the gain of said automatic gain control means to said filter as an input signal thereto.

4,564,935

TROPOSPHERIC SCATTER COMMUNICATION SYSTEM HAVING ANGLE DIVERSITY

Philip D. Kaplan, Nashua, N.H., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

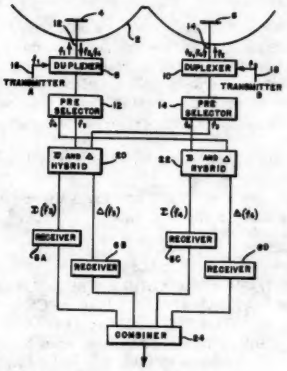
Filed Jan. 10, 1984, Ser. No. 569,644
Int. Cl.[4] H04B 7/08
U.S. Cl. 370—38 4 Claims

4. A tropospheric scatter communication system having diverse angle signal transmission paths comprising:

a reflector type antenna having a pair of feed elements of substantially identical geometry and signal response characteristics and whose phase centers are displaced in the azimuthal plane;

a hybrid unit having a pair of inputs coupled to respective ones of said pair of feed elements, a signal sum output and a signal difference output;

and means coupled to the signal sum output and the signal difference output of said hybrid unit for selecting the signal



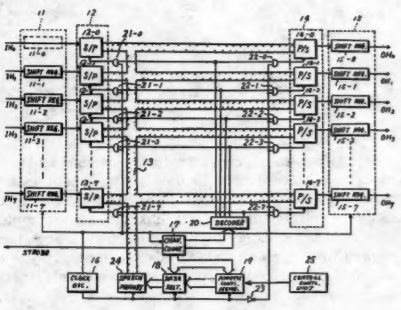
of greatest amplitude at said signal sum output and said signal difference output.

4,564,936

TIME DIVISION SWITCHING NETWORK

Kenichi Takahashi, Kawasaki, Japan, assignor to Nitsuko Limited, Kawasaki, Japan

Filed Jun. 6, 1984, Ser. No. 618,411
Claims priority, application Japan, Jun. 6, 1983, 58-100627
Int. Cl.[4] H04Q 11/04
U.S. Cl. 370—58 7 Claims



1. A time division switching network for interchanging time slots on a plurality of (N) highways, each highway transmitting a time division multiplex signal, each one frame of the time division multiplex signal having a predetermined number (n) of time slots assigned to n channels respectively, and each time slot having a plurality of (m) data bits with predetermined time intervals, which comprises:

N input highways receiving incoming time division multiplex signals;

N output highways transmitting the time division multiplex signals as exchanged;

clock pulse generator means generating clock pulses in phase with the data bits;

N buffer memory means connected to N input highways and storing data in the time slots inputted thereto;

a first random access memory having a plurality of addresses, the number of the addresses being equal to a product of the predetermined number (n) of the time slots in one frame and the number (N) of the input highways;

first means for writing one time slot data stored in said N buffer memory means into respective addresses in said first random access memory in response to the clock pulses;

second means for reading out the data stored in respective addresses in said first random access memory onto respective ones of said N output highways in response to every time interval between adjacent clock pulses;

a second random access memory storing address data of said first random access memory to be accessed by said second means;

third means for matching time slots on said N output highways; and

a central control unit for writing said address data into said second random access memory.

4,564,937

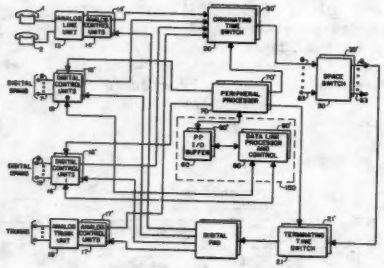
REMOTE DATA LINK ADDRESS SEQUENCER AND A MEMORY ARRANGEMENT FOR ACCESSING AND STORING DIGITAL DATA

Thomas J. Perry, Phoenix, and Muhammad Khera, Glendale, both of Ariz., assignors to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Dec. 22, 1983, Ser. No. 564,136

Int. Cl.⁴ H04J *1/10, 3/08, 3/16;* **H04Q** *11/00*

U.S. Cl. 370—58 **9 Claims**



1. An address sequencer and memory arrangement used in a remote data link controller for transferring data in the form of message bytes to a plurality of digital data links, said remote data link controller including a link processor complex for controlling said remote data link controller, a message byte formatter for assembling data words into message bytes and at least one data link input buffer and at least one data link output buffer connected to said plurality of digital data links, said address sequencer and memory arrangement comprising:

memory means including a plurality of memory location areas, each memory location area associated with one of said plurality of digital data links, said memory means arranged to be connected to said data link input buffer or alternatively to said message byte formatter wherein, said memory means receives and stores in each memory location a message byte from said message byte formatter; and

counter means connected to said memory means arranged to have a preset count loaded into said counter means responsive to a start pulse from said link processor complex whereby, said counter means increments and outputs to said memory means addresses which sequentially access each of said memory location areas and said data link input buffer writes a message byte in each memory location area from a respective one of said plurality of digital data links and alternatively, each of said memory locations is sequentially accessed thereby transferring each message byte stored in said memory means to said data link output buffer for the transmission of each message byte over a respective one of said plurality of digital data links.

4,564,938

DIGITAL ELECTRONIC SWITCHING SYSTEMS

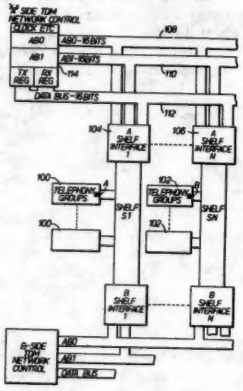
Gordon P. Boot, Cotgrave, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Sep. 14, 1983, Ser. No. 532,095

Claims priority, application United Kingdom, Sep. 15, 1982, 8226237

Int. Cl.⁴ H04Q *11/00*

U.S. Cl. 370—85 **5 Claims**



1. A digital electronic switching system comprising:

(A) a plurality of first and second electronic apparatus;

(B) a plurality of third and fourth electronic apparatus;

(C) respective first data highways interconnecting said first and said second electronic apparatus to said third and fourth electronic apparatus; and

(D) a time division multiplex highway interconnecting said third and said fourth electronic apparatus; said time division multiplex highway including:

(i) a first and second address bus, and

(ii) a parallel data bus divided into two parallel buses for bi-directional data transfer between said third and said fourth electronic apparatus in a single time slot period of said time division multiplex highway;

in which said first and said second address buses are connected to

(E) a first and second address memory;

said third and said fourth electronic apparatus including:

(i) address decoding means responsive to addressing from said first and said second address memories via said first and said second address buses in a first time slot of said time division multiplex highway to identify particular ones of said first and said second electronic apparatus to be actuated;

(ii) means to cause said particular ones of said first and said second electronic apparatus to cause data held therein to be transferred via said first highway to said third and said fourth electronic apparatus in a second time slot of said time division multiplex highway;

(iii) means to cause output of the data so transferred in the second time slot to said parallel data bus in a third time slot of the time division multiplexed highway; and

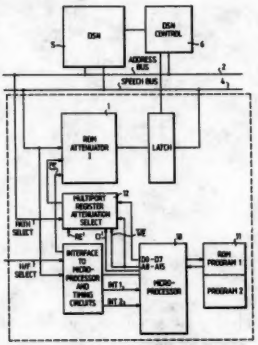
(iv) means to cause transfer via the first highway of the data received in the third time slot to the first and second electronic apparatus in a fourth time slot of the time division multiplex highway; said address decoding means adapted to respond to

addressing during said second, third and fourth time slots and said parallel data bus adapted to carry data during said first, second and fourth time slots.

4,564,939
HANDSFREE TELEPHONE

Bjorn N. Hansen, Haverhill, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 14, 1984, Ser. No. 589,611
Claims priority, application United Kingdom, Mar. 15, 1983, 8307143
Int. Cl.[4] H04J 3/02
U.S. Cl. 370—85 **2 Claims**



1. A digital handsfree telephone subscriber terminal circuit for transmitting and receiving digital time division multiplex speech in a plurality of channels comprising:

means for monitoring the speech signal condition of transmited and received speech at said terminal;

means for increasing the attenuation in either the transmitted or received speech direction in response to an indication from said monitoring means that speech is not present in said direction;

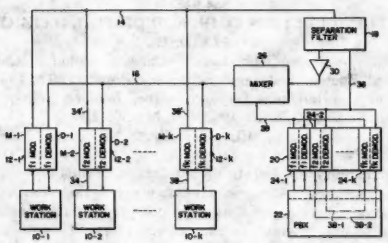
means for comparing monitored speech signals in the received and transmitted directions with a preset threshold level; and

digital processor means for causing said means for increasing the attenuation to adjust the attenuation, and including means for causing said monitoring means to monitor less than a full number of samples of said transmitted and received speech, such that only one out of N samples are monitored singly and successively for each of said plurality of speech channels.

4,564,940
BROAD BAND NETWORK SYSTEM

Haruki Yahata, Fujisawa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 22, 1983, Ser. No. 564,179
Claims priority, application Japan, Dec. 28, 1982, 57-227401
Int. Cl.[4] H04Q 11/04; H04J 7/02
U.S. Cl. 370—124 **25 Claims**



1. A signal multiplex transmission system comprising:

(a) plurality of terminal units including a plurality of first terminal units for processing information signals to generate first information signals which are multiplexed to be transmitted as first multiplexed information signals in a first frequency band and a plurality of second terminal units for processing information signals to generate second information signals which are multiplexed to be transmitted as second multiplexed information signals in a second frequency band;

(b) branch exchange means for allowing signal transmission between said first terminal units;

(c) signal separation means for receiving the first and second multiplexed information signals, for separating the first multiplexed information signals from the second multiplexed information signals, and for transmitting the first multiplexed information signals to said branch exchange means and outputting the second multiplexed information signals; and

mixer means, connected to said branch exchange means and said signal separation means, for receiving the first multiplexed information from said first terminal units through said branch exchange means and the second multiplexed information signals from said signal separation means, and for mixing the first and second multiplexed information signals to supply a composite signal to said first and second terminal units.

4,564,941
ERROR DETECTION SYSTEM

Richard N. Woolley, Mountain View, Calif.; Neal Glover, Broomfield, Colo., and Richard Williams, San Jose, Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Dec. 8, 1983, Ser. No. 559,210
Int. Cl.[4] G06F 11/10
U.S. Cl. 371—2 **36 Claims**

1. A method for storing and recovering data in a data processing system, said data being organized into a plurality (N) of sequential bytes, such that an error in a byte is propagated throughout each subsequent byte, comprising the steps of:

performing an exclusive-OR operation between each byte (i) and the previous byte (i−1) in order to obtain a resultant value (R_i);

storing each of said resultant values R_i in a storage device;

reading said resultant values R_i from said storage device;

recovering said data bytes from said resultant values by performing an exclusive-OR operation between each value R_i and the previously recovered data byte (i−1), such that:

$$\text{byte} = [R_i \oplus \text{byte}_{i-1}]_{i=1}^{i=N}$$

where:

"N"=number of bytes in said data, and

"⊕" denotes an exclusive-OR operation;

whereby an error in a byte is propagated throughout subse-

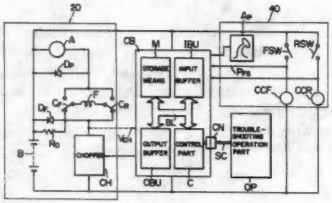
quent bytes, thereby increasing the detectability of said error.

4,564,942

TROUBLE SHOOTING SYSTEM FOR ELECTRIC VEHICLE

Michimasa Horiuchi, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1983, Ser. No. 476,267
Claims priority, application Japan, Mar. 19, 1982, 57-42665
Int. Cl.⁴ G06F *11/22*
U.S. Cl. 371—20 **14 Claims**



1. A trouble shooting system for an electric vehicle, said electric vehicle being provided with a driving part, a driving operation part and a control device, said driving part including a power source, an electric motor and means for controlling electric power supplied from said power source to said electric motor in response to said driving operation part for driving said electric vehicle, and said control device including a microprocessor connected to receive a command from said driving operation part for supplying a control signal to said driving part and storage means for storing therein a drive control program to be executed by said microprocessor for generating said control signal, said trouble shooting system comprising:

storage means provided in said control device for storing therein a plurality of trouble shooting programs to be executed by said microprocessor for effecting trouble shooting for various parts of said electric vehicle; and

a trouble-shooting operation part releasably coupled to said control device and including command generating means responsive to manual operation for generating and supplying a command to said microprocessor in said control device to cause said microprocessor to read out and execute a selected one of said trouble shooting programs and means responsive to said microprocessor for displaying the identification of a trouble-shooting program which is being processed.

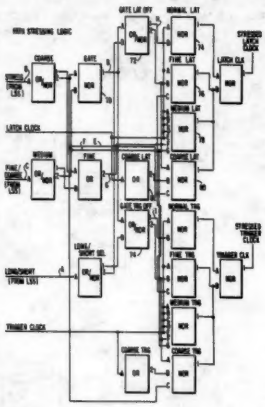
4,564,943

SYSTEM PATH STRESSING

John C. Collins, and John J. DeFazio, both of Poughkeepsie, N.Y., assignors to International Business Machines, N.Y.

Filed Jul. 5, 1983, Ser. No. 510,802
Int. Cl.⁴ G01R *31/28*
U.S. Cl. 371—28 **13 Claims**

1. In a data processing system having at least a first device providing output data to a data path in response to a first clock signal, and a second device storing input data from said dath path in response to a second clock signal, a system clock control apparatus for providing said first and second clock signals to said first and second devices, said system clock control apparatus comprising path stressing means for varying the timing relationships between said first and second clock signals, said path stressing means comprising delay means for



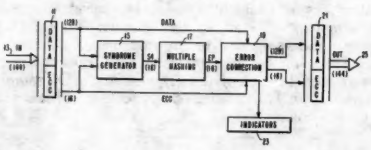
selectively delaying either one of said first and second clock signals with respect to the other.

4,564,944

ERROR CORRECTING SCHEME

Richard F. Arnold, Palo Alto, Calif.; John Cocke, Bedford, N.Y.; Don Coppersmith, Ossining, N.Y.; Adrian E. Seigler, and Gary E. Strait, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1983, Ser. No. 567,212
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—37 **13 Claims**



1. A method for generating error position indications for use with an error detection and correction scheme in which error syndromes are produced, characterized by hashing each error syndrome by a plurality of hashing functions, using the respective hash outputs to address a plurality of lookup tables, and logically combining the table outputs to generate an error pointer.

4,564,945

ERROR-CORRECTION CODE FOR DIGITAL DATA ON VIDEO DISC

Neal Glover, Broomfield; Kermit Clausen, Boulder; Chris Mayne, Boulder, and Randy Glissmann, Boulder, all of Colo., assignors to Reference Technology, Inc., Boulder, Colo.

Filed Jun. 20, 1983, Ser. No. 505,210
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—38 **86 Claims**

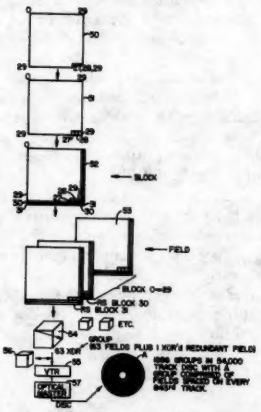
1. A memory for storing digital data, said memory being encoded with a two-dimensional data array having error-correction code therein, said data array comprising data intervals of multi-bit binary words, said words being written in rows and columns of sequential multi-bit binary words filling less than all of the data intervals of said array;

said memory for storing digital data including at least one

data interval therein for at least one auxiliary check byte computed across said data array;

said memory for storing digital data further having a two-dimensional data array including at least first and second row-correcting columns having means for correcting errors across rows of data;

said memory for storing digital data further having a two-dimensional data array including at least first and second column-correcting rows having means for correcting errors acros columns of data;

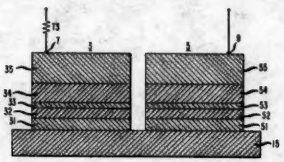


said memory readable along said two dieminsions so that each row-correcting column and each column-correcting row including coded information for the location and correction of at least one error in a column and/or one error in a row whereby upon data regeneration by said columns and rows, said regenerated data can be used in the calculation of auxiliary check syndromes to indicate whether data has been accurately regenerated.

4,564,946
OPTICAL COMMUNICATIONS SYSTEM USING FREQUENCY SHIFT KEYING

Nils A. Olsson, Berkeley Heights, and Won-Tien Tsang, New Providence, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 25, 1983, Ser. No. 469,800
Int. Cl.⁴ H01S 3/19
U.S. Cl. 372—20 **6 Claims**



1. A device comprising a light source,

characterized in that said light source comprises a cleaved coupled cavity laser, said laser comprising

a first semiconductor laser diode section, said first section having a first active layer;

a second semiconductor laser diode section, said second section having a second active layer, said first and second active layers having a width less than approximately 20 μm;

said first and second sections being optically coupled in both directions through spaced cleaved surfaces;

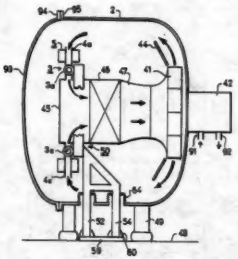
means for adjusting the refractive index of said first and second sections relative to each other;

and means for selecting one desired output frequency from a group of at least two output frequencies.

4,564,947
HIGH-POWER LASERS

Jacob Daniel, Holon, Israel, assignor to Metalworking Lasers International Ltd., Neve Sharett, Israel

Filed Sep. 30, 1982, Ser. No. 431,252
Int. Cl.⁴ H01S 3/22
U.S. Cl. 372—58 **10 Claims**

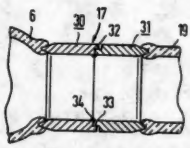


1. A high-power flowing-gas laser comprising: an outer housing having a sealed wall capable of withstanding an internal pressure different from atmosphere; an optical system including a folded laser channel constituted of a plurality of legs disposed in a polygon configuration; an impeller for producing a flow of gas through said folded laser channels; a gas flow channel for each laser channel leg, each of said gas flow channels including an inlet end for receiving gas from the impeller, and an outlet end formed with a pair of aligned laser openings for accommodating the laser beam of the respective laser channel leg; and a partition wall extending across the interior of the housing between the outlet end of the impeller and the inlet ends of said gas flow channels for substantially conforming the gas flow from the impeller first through the inlet ends of the gas flow channels, and then through the outlet ends thereof, whereby there is no significant gas flow through the laser openings at the outlet ends of the gas flow channels.

4,564,948
GAS LASER TUBE

Hans Golser, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,609
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311726
Int. Cl.⁴ H01S 3/03
U.S. Cl. 372—61 **15 Claims**



1. A gas laser tube with a vacuum envelope, comprising: a tubular section formed of an electrically insulating material

with a coefficient of thermal expansion χ_1; an end section formed of an electrically insulating material with a coefficient of thermal expansion χ_2, such that

$$\left|\frac{H_1 - H_2}{H_i}\right| \geqq 0.2,$$

wherein i=1, 2; and a transition element connecting said tubular section to said end section;

said transition element including a first metallic section in the form of a first metal ring adjacent said tubular section and a second metallic section in the form of a second metal ring, said first and second metallic sections having different respective coefficients of thermal expansion χ_3 and χ_4; said first metallic section being thermally matched to said tubular section such that

$$\left|\frac{H_1 - H_3}{H_m}\right| < 0.2,$$

wherein m=1, 3; said second metallic section being thermally matched to said end section such that

$$\left|\frac{H_2 - H_4}{H_n}\right| < 0.2,$$

wherein n=2, 4; said first and second metallic sections having end surfaces with mutually supplementary steps formed therein being disposed inside each other; said first and second metallic sections having inner wall surfaces being joined together;

said metal rings having ends facing each other, said mutually complimentary steps including outer and inner ridges in the form of a respective sharp increase of the inner wall surface area of one of said metal rings at said end thereof, and a respective sharp reduction of the diameter of the outer periphery of the other of said metal rings; and

in said transition element; the ratio of the inner diameter to the total length thereof is between 0.5:1 and 1.5:1; the ratio of the length of one of said metal rings to the length of the other is between 0.7:1 and 1.3:1; and the ratio of the wall thickness to the total length is between 0.06:1 and 0.15:1.

4,564,949

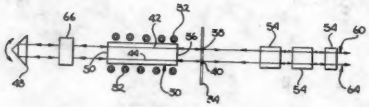
FOLDED CAVITY LASER FOR HOLOGRAPHY

James D. Trolinger, Costa Mesa, Calif., assignor to Spectron Development Laboratories, Costa Mesa, Calif.

Continuation of Ser. No. 499,497, Dec. 13, 1982, abandoned. This application Apr. 26, 1985, Ser. No. 726,959

Int. Cl.[4] H01S *3/081*

U.S. Cl. 372—93 **5 Claims**



1. An improved folded cavity laser, comprising:

lasing means having front and rear optical surfaces disposed in an optical cavity for generating at least two parallel beams of laser radiation, each beam being equally spaced from the axis of said lasing means;

said optical cavity comprising mirror means for reflecting said laser radiation, and a retro-reflecting roof prism capable of rotation about the axis of said lasing means, said mirror means and said roof prism aligned with the axis of the lasing means, and said roof prism being large enough to receive substantially all of the radiation from said lasing means;

pumping means coupled to said lasing means for providing energy to said lasinng means to generate said laser radiation;

said retro-reflecting roof prism arranged such that said laser beams received from said laser cavity are reflected back to said laser cavity on at least two paths, said paths being equally spaced about the axis of said lasing means;

a transverse mode selector disposed between and in optical alignment with both said front optical surface and said mirror means;

said transverse mode selector arranged in said optical cavity to produce at least two folded cavities within said lasing means which, together with said retro-reflecting prism, generate at least two spatially separated, mutually coherent, in-phase and co-existing laser beams in said lasing means and said optical cavity;

said mirror means including inner and outer reflecting surfaces, said inner reflecting surface virtually all incident laser radiation back to said lasing means, and said outer reflecting surface only partially reflecting said laser radiation back to said front optical surface and permitting the remainder of said laser radiation to pass therethrough,

whereby multiple, mutually coherent laser beams are generated by said lasing means.

4,564,950

GUARD ARRANGEMENT FOR A BOTTOM ELECTRODE OF A DIRECT-CURRENT ARC FURNACE

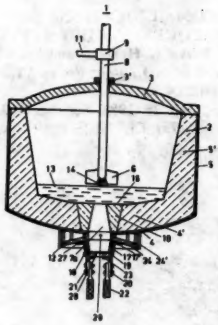
Karl Bühler, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jul. 24, 1984, Ser. No. 633,983

Claims priority, application Switzerland, Jul. 28, 1983, 4133/83

Int. Cl.[4] H05B *7/20*

U.S. Cl. 373—108 **3 Claims**



1. A direct-current electric arc furnace for melting metals, comprising:

a furnace vessel having a bottom;

at least a pair of electrodes, including a bottom electrode mounted in the bottom of said vessel,

means for cooling said bottom electrode; and

a shielding roof provided as a guard against molten metal which may penetrate through the bottom of said vessel, said shielding roof mounted between the bottom of the furnace vessel and the cooling means.

4,564,951
COOLING ARRANGEMENT OF A BOTTOM ELECTRODE FOR A DIRECT-CURRENT ARC FURNACE

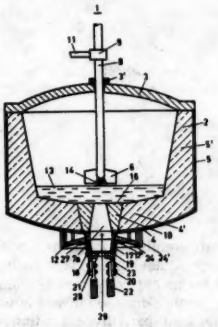
Karl Bühler, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jul. 24, 1984, Ser. No. 633,987

Claims priority, application Switzerland, Jul. 28, 1983, 4136/83

Int. Cl.⁴ H05B 7/20

U.S. Cl. 373—108 **6 Claims**



1. A direct-current arc furnace for melting metal, comprising:

a furnace vessel having a bottom;

at least a pair of electrodes, including a bottom electrode mounted in the bottom of said vessel, said bottom electrode having an end part projecting from the furnace vessel;

a connecting piece mounted exterior of said vessel bottom for holding at least a portion of said end part of the a bottom electrode below the vessel bottom, said connecting piece having an interior cavity extending in the direction of the vessel bottom to define contact surfaces substantially enveloping and fittingly, detachably contacting said portion of said end part of said bottom electrode; and

means for cooling said connecting piece;

wherein said connecting piece serves as a cooling contact sleeve for said end part of said bottom electrode.

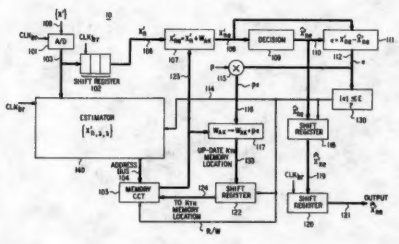
4,564,952
COMPENSATION OF FILTER SYMBOL INTERFERENCE BY ADAPTIVE ESTIMATION OF RECEIVED SYMBOL SEQUENCES

Peter D. Karabinis, Atkinson, and Thomas L. Osborne, Sandown, both of N.H., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 8, 1983, Ser. No. 559,473

Int. Cl.⁴ H04B 3/04, 1/10

U.S. Cl. 375—14 **26 Claims**



14. A method of compensating for distortion in received digital symbol values wherein each received symbol value represents one of a plurality of transmitted symbol values, said method comprising the steps of

altering a received symbol value by a preselected amount, said amount being in response to an estimate of the transmitted symbol values represented by said received symbol value and N other received symbol values, where N is an integer greater than zero;

comparing said altered symbol value to a closest one of said plurality of transmitted symbol values to determine any difference therebetween; and

outputting said closest one of said plurality of transmitted symbol values in lieu of said received symbol value if said difference meets a preselected criterion.

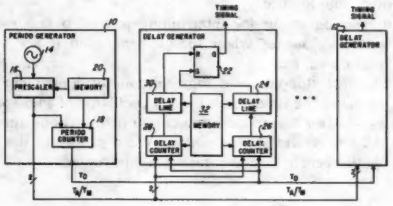
4,564,953
PROGRAMMABLE TIMING SYSTEM

Paul M. Werking, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 28, 1983, Ser. No. 479,373

Int. Cl.⁴ H03K 23/66, 5/13, 5/04

U.S. Cl. 377—52 **3 Claims**



1. A timing system comprising:

a clock for generating clock signals;

first counting means connected to receive and count said clock signals for providing first output signals at predetermined counts, comprising a first set of logic gates each clocked by said clock signals and wherein a modulus of said first counting means corresponds to which gates are enabled;

means connected to said first counting means for varying the modulus of said first counting means comprising, a second set of logic gates, each gate in said second set being coupled to an enabling input of one of said first set of logic gates, wherein each gate in said second set is enabled by one or more modulus select signals so that said first output signals are delayed by a number of clock signal counts equal to a selected modulus;

second counting means connected to receive said first output signals for counting said first output signals and providing second output signals at predetermined counts; and

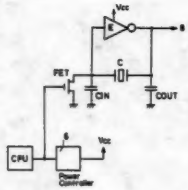
at least one programmable delay means each connected to the outputs of said first and second counting means for providing a timing signal of a preselected duration upon the occurrence of each of said first and second output signals.

4,564,954

NOISE REDUCTION CIRCUIT OF SYNTHETIC SPEECH GENERATING APPARATUS

Hiroshi Nittaya, and Kosuke Nishimura, both of Yamatokoriyama, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 5, 1983, Ser. No. 455,769
Claims priority, application Japan, Jan. 8, 1982, 57-2027
Int. Cl.[4] G10L *1/00*
U.S. Cl. 381—51 5 Claims



1. A synthetic speech generating apparatus comprising:

synthetic speech generator means including at least a speech synthesizer, a power amplifier, a logic circuit, and an oscillator for providing a fundamental clock signal;

power supply means;

interruption means for interrupting power to said speech generator means when speech generation is not being performed; and

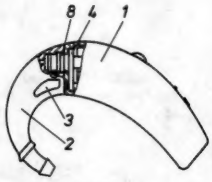
means for stopping said logic circuit by controlling and stopping the fundamental clock oscillator of said speech synthesizer before the logic circuit malfunctions due to a drop in power supply voltage when power to the synthetic speech generator means is interrupted.

4,564,955

COUPLING FOR USE IN THE SECURING OF A HOOK-SHAPED SOUND PART ON A BEHIND-THE-EAR HEARING AID

Leon Birch, Stenlose, and Jorgen Hartmann, Glostrup, both of Denmark, assignors to Danavox A/S, Copenhagen, Denmark

Filed Oct. 19, 1983, Ser. No. 543,291
Claims priority, application Denmark, Nov. 5, 1982, 4920/82
Int. Cl.[4] H04R *25/00*
U.S. Cl. 381—69 6 Claims



1. A two part coupling for use in a behind-the-ear hearing aid, said hearing aid having a hook-shaped part for conducting sound and a hearing aid body, said coupling comprising:

a coupling aperture disposed in said hookshaped part with a projecting wall partially extending into said coupling aperture;

a coupling link having a substantially cylindrical plug-shaped part and having a longitudinal axis, said coupling link being mounted on said hearing aid body for conducting sound therefrom, a section of said plug-shaped part having a portion with an arcuate cross-section transverse to said longitudinal axis, said portion including a partly annular groove therein parallel to said cross-section and further including a flat portion having a substantially flat surface transverse to said longitudinal axis, said plug-shaped part engaging with said coupling aperture,

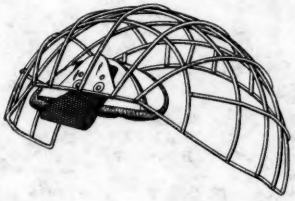
wherein said two part coupling includes a free position in which said hook-shaped portion and said hearing aid body can be separated and assembled, and a coupling position in which said hook-shaped portion is coupled to said hearing aid body and to which said hook-shaped portion can be turned in relation to said hearing aid body.

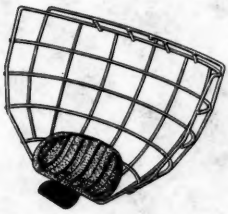
DESIGNS

JANUARY 14, 1986

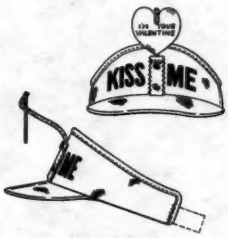
282,116
SWIMWEAR
Jacquelyn A. B. Myles, 1427 Newton Ave., Dayton, Ohio 45406
Continuation-in-part of Ser. No. 347,912, May 4, 1982, Pat. No. 275,810, which is a continuation-in-part of Ser. No. 86,477, Oct. 19, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 431,648
Term of patent 14 years
U.S. Cl. D2—37

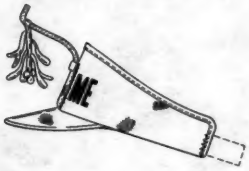
282,117
FACE PROTECTING MASK
Jan Grönborg, Huddinge, and Lars Persson, Åkersberga, both of Sweden, assignors to Svensk Sportutveckling AB, Stockholm, Sweden
Filed Jul. 26, 1983, Ser. No. 517,451
Claims priority, application Sweden, Jan. 28, 1983, 83-0246
Term of patent 14 years
U.S. Cl. D2—233





282,118
COMBINED VISOR AND NOVELTY HANG TAG
Frank Mengwasser, 1141 Hobbs Mill, St. Louis, Mo. 63011
Filed Mar. 3, 1983, Ser. No. 471,874
Term of patent 14 years
U.S. Cl. D2—247





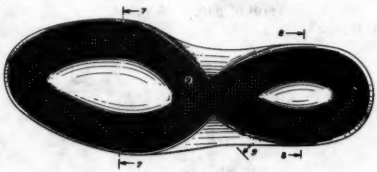
282,119
HIGH HEELED CALF LENGTH SNEAKER
Norma Kamali, 6 W. 56th St., New York, N.Y. 10019
Filed Apr. 7, 1983, Ser. No. 482,853
Term of patent 14 years
U.S. Cl. D2—275

282,120
HIGH HEELED LOW TOP SNEAKER
Norma Kamali, 6 W. 56th St., New York, N.Y. 10019
Filed Apr. 7, 1983, Ser. No. 482,851
Term of patent 14 years
U.S. Cl. D2—285

282,121
HIGH HEELED ANKEL TOP SNEAKER
Norma Kamali, 6 W. 56th St., New York, N.Y. 10019
Filed Apr. 7, 1983, Ser. No. 482,854
Term of patent 14 years
U.S. Cl. D2—285

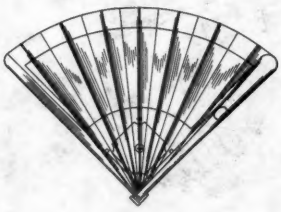
282,122
SHOE HEEL GUARD
Michael S. Beck, Lake Worth, Fla., assignor to Security Comfort Co. Inc., Lake Worth, Fla.
Filed Apr. 13, 1983, Ser. No. 484,667
Term of patent 14 years
U.S. Cl. D2—314

282,123
SHOE OUTSOLE
Howard Davis, New York, N.Y., assignor to 8 Track Shoe Corporation, White Plains, N.Y.
Filed Nov. 18, 1982, Ser. No. 442,835
The portion of the term of this patent subsequent to Dec. 28, 1996, has been disclaimed.
Term of patent 14 years
U.S. Cl. D2—320



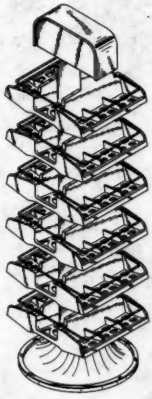
282,124
GLOVE WITH ILLUMINABLE FINGER
Guy R. Billings, 119 W. Madison Ave., Bastrop, La. 71220
Filed May 9, 1983, Ser. No. 492,786
Term of patent 14 years
U.S. Cl. D2—365

282,125
BASEBALL FAN
Patrick R. Alonzo, 2361 W. Birchwood Ave., Milwaukee, Wis. 53221
Filed Nov. 17, 1983, Ser. No. 552,703
Term of patent 14 years
U.S. Cl. D3—3

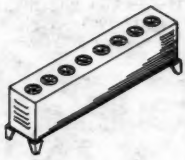


282,126
SEAT WITH ADJUSTABLE HEADREST
Hans Hopfer, Paris, France, assignor to Alex Synn AG, Cham, Switzerland
Filed Jun. 28, 1983, Ser. No. 508,538
Claims priority, application The Hague, Dec. 29, 1982, DM/002 093
Term of patent 14 years
U.S. Cl. D6—367

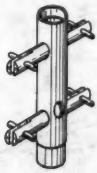
282,127
DISPLAY STAND FOR BOOKS OR THE LIKE
Peter J. Weiller, Armonk, N.Y., assignor to Thomson-Leeds Company, Inc., New York, N.Y.
Filed Aug. 10, 1983, Ser. No. 522,460
Term of patent 14 years
U.S. Cl. D6—411



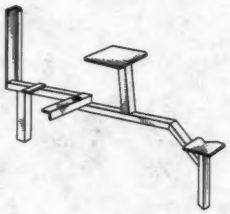
282,128
REFRIGERATED CONTAINER FOR ALCOHOLIC BEVERAGES AND MIXERS OR THE LIKE
Benjamin H. Bell, 1807 Meadowdale Ave., Atlanta, Ga. 30306; Gregory T. Maloof, 2626 Valmar Dr., Doraville, Ga. 30340, and Charles W. Reeve, 105 Saddlebrook Dr., Peachtree City, Ga. 30269
Filed Sep. 6, 1983, Ser. No. 529,289
Term of patent 14 years
U.S. Cl. D6—469



282,129
UPRIGHT MEMBER FOR THE MODULAR ASSEMBLY OF AN EXHIBITION STALL
Harry Glück, Vienna, Austria, assignor to Ellesse International S.p.A., Ellera Umbra, Italy
Division of Ser. No. 434,356, Oct. 14, 1982. This application Dec. 28, 1984, Ser. No. 687,259
Term of patent 14 years
U.S. Cl. D6—491

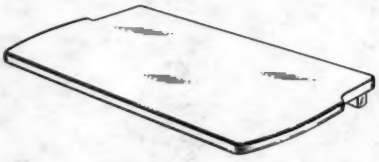


282,130
SUPPORT FRAME FOR A COMBINED SEAT AND TABLE UNIT
Scott D. Crowe, 45 Jody La., Camarillo, Calif. 93010
Filed Mar. 14, 1983, Ser. No. 474,786
Term of patent 14 years
U.S. Cl. D6—491

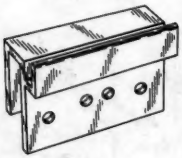


282,131
CHAIR FRAME
Mike T. Claman, 1766 Hickory Blvd. SW., Lenoir, N.C. 28645
Filed Aug. 25, 1983, Ser. No. 526,269
Term of patent 14 years
U.S. Cl. D6—500

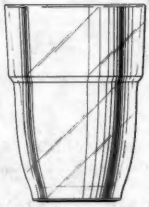
282,132
SHELF OR SIMILAR ARTICLE
Dean K. Santner, P.O. Box 88185, Emeryville, Calif. 94662
Filed Apr. 18, 1983, Ser. No. 485,663
Term of patent 14 years
U.S. Cl. D6—511

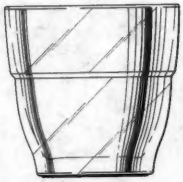


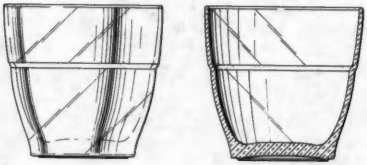
282,133
DECORATOR ROD PULLEY HOUSING
Ivan A. Smith, Cheltenham, Australia, assignor to Village Nominees Pty. Ltd., Windsor, Australia
Filed Feb. 7, 1983, Ser. No. 464,793
Claims priority, application Australia, Aug. 5, 1982, 1175/82
Term of patent 14 years
U.S. Cl. D6—580



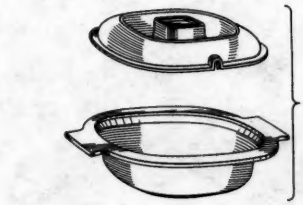
282,134
TUMBLER OR SIMILAR ARTICLE
Jean-Jacques Durand, LaBute, 62510 Arques, France
Filed Aug. 16, 1983, Ser. No. 523,579
Term of patent 14 years
U.S. Cl. D7—15

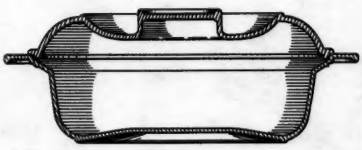






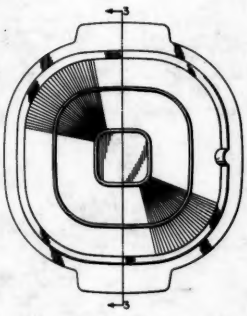
282,135
COVERED CASSEROLE
Donald R. McClelland, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jul. 6, 1982, Ser. No. 395,656
Term of patent 14 years
U.S. Cl. D7—18

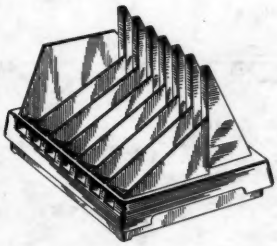




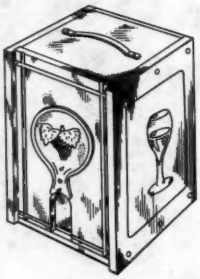
282,136
TEXAS MEAT PRESS
Geraldine J. Skermetta, 7914 Village Oak, San Antonio, Tex. 78233
Filed Jun. 15, 1983, Ser. No. 504,467
Term of patent 14 years
U.S. Cl. D7—43

282,137
STORAGE RACK
James E. Williams, Stamford, and Edward R. Kozlowski, Southport, both of Conn., assignors to Cuisinarts, Inc., Greenwich, Conn.
Filed May 13, 1983, Ser. No. 494,512
Term of patent 14 years
U.S. Cl. D7—73

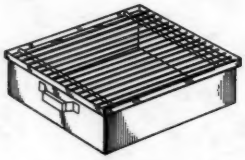




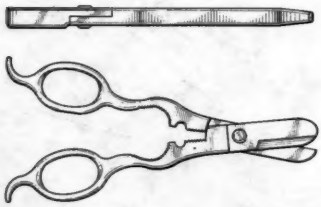
282,138
WINE COOLER
Donald A. Gullikson, 6766 Olive Branch, San Jose, Calif. 95120
Filed Oct. 25, 1982, Ser. No. 436,449
Term of patent 14 years
U.S. Cl. D7—300



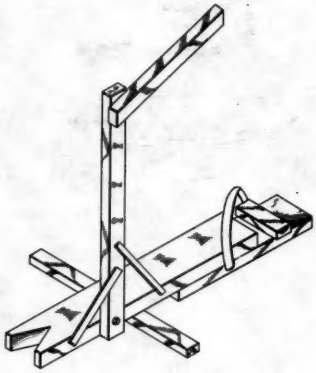
282,139
COMBINED OVEN BARBEQUE AND WATER, SEASONING AND DRIP PAN
Eugene Radford, 981 W. Tennyson, Apt. 201, Hayward, Calif. 94545
Filed Mar. 28, 1983, Ser. No. 479,685
Term of patent 14 years
U.S. Cl. D7—360



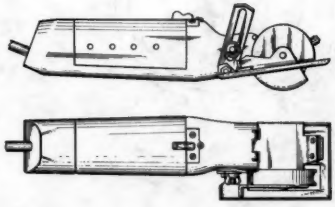
282,140
HARVESTING SHEARS
Harutyun G. Nalbandyan, and Nikolaes A. Nalbandyan, both of 4421 Melbourne Ave., Apt. 5, Los Angeles, Calif. 90027
Filed Jun. 20, 1983, Ser. No. 506,113
Term of patent 14 years
U.S. Cl. D8—5



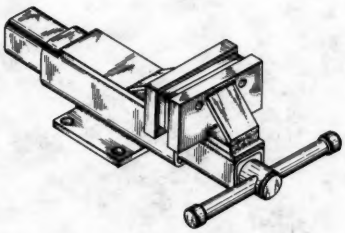
282,141
FULCRUMED TOOL FOR A SHOVEL OR SIMILAR ARTICLE
Eugene L. Hayman, Jr., 317 W. Oak, Deer Park, Tex. 77536
Filed Apr. 14, 1983, Ser. No. 484,779
Term of patent 14 years
U.S. Cl. D8—10



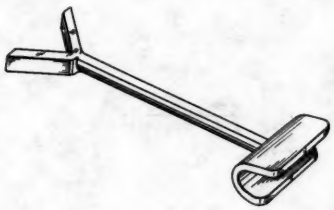
282,142
SAW
John Siravo, 20 Colfax Ave., Staten Island, N.Y. 10306
Filed Jul. 7, 1983, Ser. No. 511,558
Term of patent 14 years
U.S. Cl. D8—66



282,143
VISE
Carl S. Tarquinio, 1048 Chelsea Ave., Santa Monica, Calif. 90403
Filed Aug. 23, 1982, Ser. No. 410,418
Term of patent 14 years
U.S. Cl. D8—74



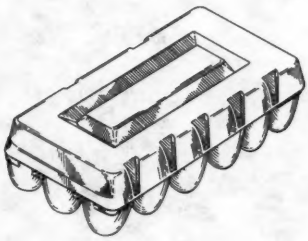
282,144
BRACE FOR MOTOR BOAT DRIVE UNIT
Paul G. Speelman, 319 Old St. Rd., Clarksville, Ohio 45133
Filed Jul. 14, 1983, Ser. No. 513,704
Term of patent years
U.S. Cl. D8—349



282,145
DISPLAY FRAME HANGER
Mark T. Cole, West Groton, and Charles F. Sherman, Townsend, both of Mass., assignors to Nielsen Moulding Design Corp., Townsend, Mass.
Filed May 31, 1983, Ser. No. 499,329
Term of patent 14 years
U.S. Cl. D8—373

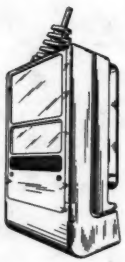
282,146
CAN CARRIER
Ronald C. Wallin, and Wesley A. Wallin, both of 132 Federal Rd., Danbury, Conn. 06810
Filed Jul. 14, 1983, Ser. No. 513,757
Term of patent 14 years
U.S. Cl. D9—344

282,147
EGG CARTON
Raj K. Mangla, East Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Apr. 28, 1983, Ser. No. 489,617
Term of patent 14 years
U.S. Cl. D9—345

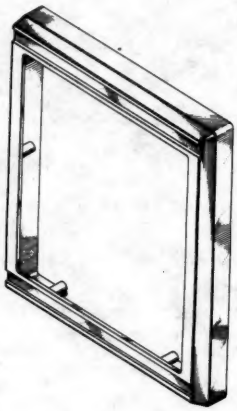


282,148
BOTTLE
Reijiro Yoshimura, New York, N.Y., assignor to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
Filed Jul. 13, 1983, Ser. No. 513,171
Claims priority, application Japan, Mar. 11, 1983, 58-10064
Term of patent 14 years
U.S. Cl. D9—378

282,149
AUDIO DOSIMETER FOR DETECTING NOISE LEVEL
David A. White, Folcroft, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 8, 1983, Ser. No. 483,435
Term of patent 14 years
U.S. Cl. D10—46



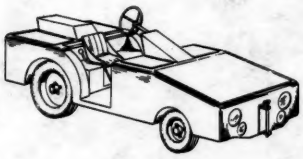
282,150
INSTRUMENT CASE MOLDING
Warren L. Atkins, Anaheim, Calif., assignor to International Telephone & Telegraph Corp., New York, N.Y.
Filed Apr. 11, 1983, Ser. No. 484,056
Term of patent 14 years
U.S. Cl. D10—103



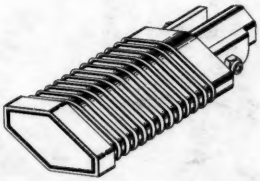
282,151
NECK PENDANT
Helen F. Mills, 20440 Anza Ave. #323, Torrance, Calif. 90503
Filed Apr. 30, 1984, Ser. No. 605,130
Term of patent 14 years
U.S. Cl. D11—81

282,152
FLOWER VASE OR SIMILAR ARTICLE
Walter M. Mendenhall, 512 Lillian Dr., Madeira Beach, Fla. 33708
Filed Aug. 5, 1982, Ser. No. 405,421
Term of patent 14 years
U.S. Cl. D11—154

282,153
TOWING VEHICLE
Robert H. Wallace, and Jerry R. Gravitt, both of Cumming, Ga., assignors to Tri-Tractor Manufacturing Co., Inc., Cumming, Ga.
Filed Apr. 1, 1983, Ser. No. 481,303
Term of patent 14 years
U.S. Cl. D12—14



282,154
MOTORCYCLE FOOTREST
Tyrone A. Cruze, and Nace J. Panzica, both of San Jose, Calif., assignors to Custom Chrome, Morgan Hill, Calif.
Filed Apr. 20, 1984, Ser. No. 602,551
Term of patent 14 years
U.S. Cl. D12—114



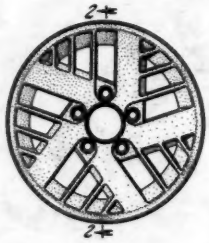
282,155
VEHICLE LUGGAGE CARRIER
John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236
Filed May 12, 1983, Ser. No. 493,945
Term of patent 14 years
U.S. Cl. D12—157

282,156
AIRCRAFT THROTTLE HANDLE
Anthony W. Le Vier, LaCanada-Flintridge, Calif., assignor to R.P.O.M.C.T. Limited Partnership, Englewood, Colo.
Filed May 19, 1983, Ser. No. 496,189
Term of patent 14 years
U.S. Cl. D12—174

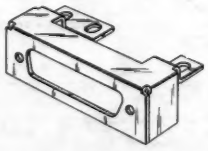
282,157
FRONT SPOILER
Hans Kerschbaum, Oberdachstetten, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke A.G., Fed. Rep. of Germany
Filed Jul. 16, 1982, Ser. No. 398,936
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1982, MR 12822
Term of patent 14 years
U.S. Cl. D12—181

282,158
MUD FLAP OR THE LIKE
Bert H. Wright, 33 Victor St., Beaumaris, Victoria, Australia
Filed Oct. 4, 1983, Ser. No. 538,873
Claims priority, application Australia, Jul. 13, 1983, 4370/83
Term of patent 14 years
U.S. Cl. D12—185

282,159
WHEEL
Richard A. Schell, Utica, and John R. Schinella, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 22, 1983, Ser. No. 525,019
The portion of the term of this patent subsequent to Aug. 21, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—211

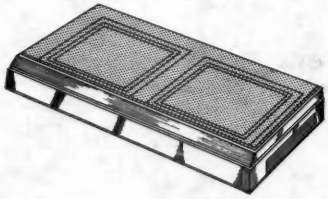


282,160
CONNECTOR MOUNTING DEVICE FOR EXTENDING I/O CONNECTIONS TO A PERSONAL COMPUTER
Frederick E. Berry, El Toro, and Ralph G. Tobelmann, Irvine, both of Calif., assignors to Emulex Corporation, Costa Mesa, Calif.
Filed Apr. 15, 1983, Ser. No. 485,450
Term of patent 14 years
U.S. Cl. D13—24



282,161
INSULATED IGNITION SWITCH COVER
George F. Barrows, II, and Niela P. Barrows, both of 2909 E. Voltaire, Phoenix, Ariz. 85032
Filed Jun. 27, 1983, Ser. No. 508,112
Term of patent 14 years
U.S. Cl. D13—32

282,162
LOUDSPEAKER
Gary E. Grimes, Watertown, Conn., assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 27, 1983, Ser. No. 507,895
Claims priority, application Benelux, Jan. 4, 1983, 57465-02
Term of patent 14 years
U.S. Cl. D14—33



282,163
SPEAKER DRIVER
Frederick L. Seebinger, Kinnelon, N.J., assignor to Atlas Sound Division Of American Trading & Production Corp., Parsippany, N.J.
Filed Nov. 14, 1983, Ser. No. 551,786
Term of patent 14 years
U.S. Cl. D14—37

282,164

PORTABLE TELEX TERMINAL CASE OR THE LIKE

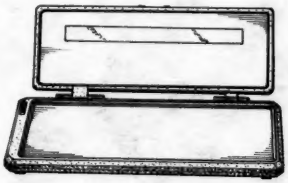
Hugo K. Krop, Amsterdam, Netherlands, assignor to Text Lite B.V., Amsterdam, Netherlands

Filed Oct. 17, 1983, Ser. No. 542,352

Claims priority, application Benelux, Apr. 19, 1983, 57803-2

Term of patent 14 years

U.S. Cl. D14—52



282,165

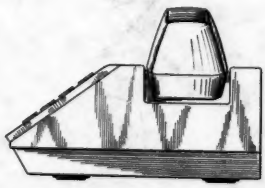
TELEPHONE SET

Wilbert C. Brown, Fairfield, Conn., assignor to TIE/Communications, Inc., Shelton, Conn.

Filed Jun. 18, 1983, Ser. No. 514,841

Term of patent 14 years

U.S. Cl. D14—53



282,166

HAND FREE PHONE

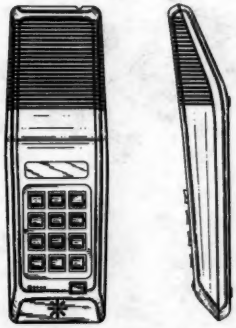
John S. K. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong

Filed Jul. 5, 1983, Ser. No. 510,836

Claims priority, application United Kingdom, Jan. 4, 1983, 1,010,594

Term of patent 14 years

U.S. Cl. D14—53



282,167

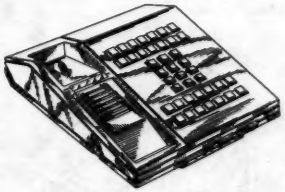
BASE FOR A TELEPHONE SET

Wilbert C. Brown, Fairfield, Conn., assignor to TIE/Communications, Inc., Shelton, Conn.

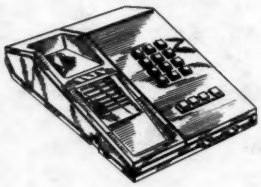
Filed Jul. 18, 1983, Ser. No. 514,836

Term of patent 14 years

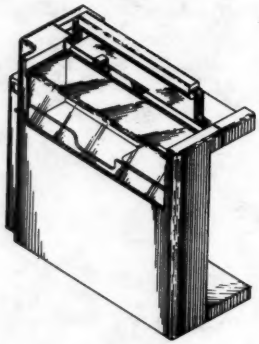
U.S. Cl. D14—62



282,168
BASE FOR A TELEPHONE SET
Wilbert C. Brown, Fairfield, Conn., assignor to TIE/Communications, Inc., Shelton, Conn.
Filed Jul. 18, 1983, Ser. No. 514,840
Term of patent 14 years
U.S. Cl. D14—62

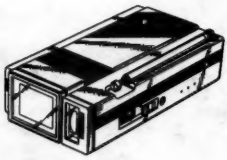


282,169
PORTABLE HOUSING FOR A MOBILE TELEPHONE, RADIO TRANSCEIVER AND BATTERY PACK
Kenneth W. Larson, Elmhurst, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 17, 1982, Ser. No. 450,605
Term of patent 14 years
U.S. Cl. D14—65



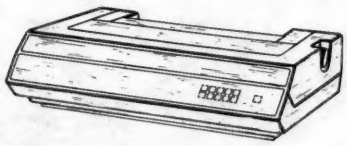
282,170
TELEVISION RECEIVER
Hiroyuki Tsubaki, Osaka; Yoshiaki Kawata, Hyogo; Yutaka Itoh, and Toyoyuki Uematsu, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sep. 29, 1983, Ser. No. 537,238
Claims priority, application Japan, Mar. 30, 1983, 58-13071
Term of patent 14 years
U.S. Cl. D14—80

282,171
TELEVISION RECEIVER
Toyoyuki Uematsu, Osaka; Yoshiaki Kawata, Hyogo; Yoshinori Harada, and Hiroyuki Tsubaki, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 7, 1983, Ser. No. 539,899
Claims priority, application Japan, Apr. 13, 1983, 58-15594
Term of patent 14 years
U.S. Cl. D14—80

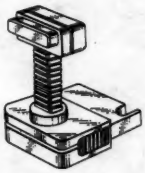


282,172
UHF ANTENNA
Reiya Mabuchi, Yokohama, Japan, assignor to Suntron Electronics Co., Ltd., Yokohama, Japan
Filed Sep. 8, 1983, Ser. No. 530,222
Term of patent 14 years
U.S. Cl. D14—86

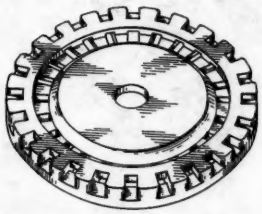
282,173
CABINET FOR AN INPUT-OUTPUT DEVICE
Gregory F. Fossella, Osterville, Mass.; John M. Karalevicz, Waynesboro, Va.; Werner H. Mailer, Waynesboro, Va., and Charles E. Milliser, Waynesboro, Va., assignors to Genicom Corporation, Waynesboro, Va.
Filed Sep. 2, 1983, Ser. No. 528,950
Term of patent 14 years
U.S. Cl. D14—100



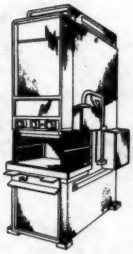
282,174
DATA TRANSMITTING OPTICAL COUPLER
Nobuo Kikuchi, Tokyo, and Hideo Fushimoto, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 18, 1983, Ser. No. 486,224
Claims priority, application Japan, Oct. 20, 1982, 57-47795
Term of patent 14 years
U.S. Cl. D14—114



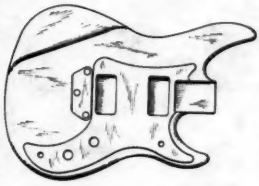
282,175
HUB FOR FLEXIBLE LAWN MOWER BLADES
Robert E. Whitman, 1-2143 Sherwood, Swanton, Ohio 43558
Filed Jun. 23, 1983, Ser. No. 507,019
Term of patent 14 years
U.S. Cl. D15—17



282,176
HYDRAULIC PRESS
Miroslav Uroshevich, Cincinnati, Ohio, assignor to Cincinnati Incorporated, Harrison, Ohio
Filed May 5, 1983, Ser. No. 491,912
The portion of the term of this patent subsequent to Sep. 3, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D15—123

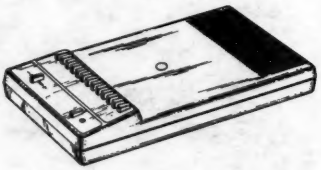


282,177
GUITAR BODY OR SIMILAR ARTICLE
Hartley D. Peavey, Meridian, Miss., assignor to Peavey Electronics Corp., Meridian, Miss.
Filed Oct. 7, 1983, Ser. No. 539,987
Term of patent 14 years
U.S. Cl. D17—20

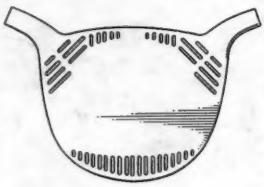


282,178
TYPEWRITER
Taro Kasagi, Tokyo, Japan, assignor to Silver Seiko Limited, Japan
Filed Dec. 29, 1983, Ser. No. 566,738
Claims priority, application Japan, Jun. 30, 1983, 58-28004
Term of patent 14 years
U.S. Cl. D18—1

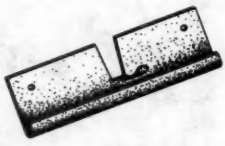
282,179
COMBINED TELEPHONE INDEX AND AMPLIFIER
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Jan. 19, 1983, Ser. No. 459,215
Claims priority, application United Kingdom, Sep. 22, 1982, 1008830
Term of patent 14 years
U.S. Cl. D19—76



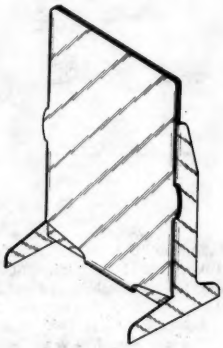
282,180
VENTED NUMBER PLATE
Robert B. Haro, Carlsbad, Calif., assignor to Haro Designs Inc., Carlsbad, Calif.
Filed Jul. 19, 1982, Ser. No. 399,353
Term of patent 14 years
U.S. Cl. D20—13



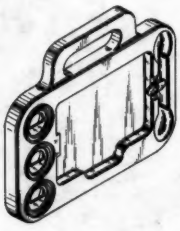
282,181
TRAY CLIP
Richard G. Hamilton, Westfield, Mass., assignor to Colonial Art Company, Inc., Westfield, Mass.
Filed Jan. 17, 1983, Ser. No. 458,351
Term of patent 14 years
U.S. Cl. D20—43



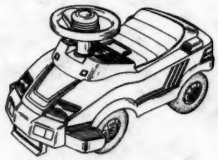
282,182
SIGN CARD HOLDER
Richard M. Liptak, Parma Heights, Ohio, assignor to Integral Design, Inc., Valley View, Ohio
Filed Aug. 18, 1983, Ser. No. 524,389
Term of patent 14 years
U.S. Cl. D20—43



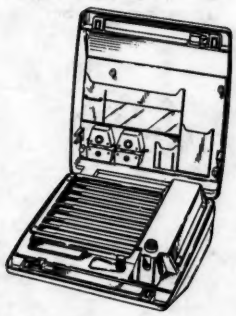
282,183
PAINTING TOY
Masami Shiraishi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jul. 25, 1983, Ser. No. 516,930
Term of patent 14 years
U.S. Cl. D21—59



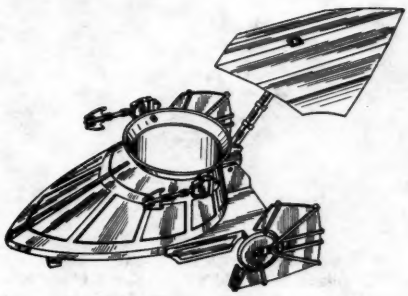
282,184
TOY VEHICLE
Shinroku Nakao, Kanagawa; Yoshiyasu Ishii, and Susumu Matsumoto, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Japan
Filed Nov. 18, 1983, Ser. No. 553,441
Claims priority, application Japan, Jun. 10, 1983, 58-25033
Term of patent 14 years
U.S. Cl. D21—78



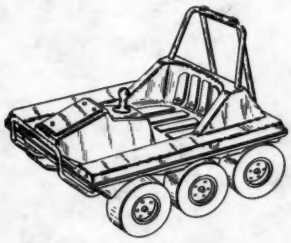
282,185
COMBINED PRINTING TOY AND CASE THEREFORE
John A. Chambers, Bingham, and Alan Collison, Rainworth, both of England, assignors to Dobson Park Industries Limited, Nottingham, England
Filed Jul. 16, 1982, Ser. No. 399,882
Claims priority, application United Kingdom, Jan. 29, 1982, 1004852
Term of patent 14 years
U.S. Cl. D21—127



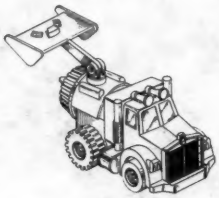
282,186
TOY VEHICLE
Mark D. Boudreaux, Cincinnati, Ohio, assignor to CPC Products Corp., Minneapolis, Minn.
Filed Nov. 21, 1983, Ser. No. 553,908
Term of patent 14 years
U.S. Cl. D21—128



282,187
RIDING TOY
Joel C. Cunard, and William H. Ziegler, Jr., both of Bedford, Pa., assignors to Hedstrom Corporation, Bedford, Pa.
Filed Nov. 25, 1983, Ser. No. 555,292
Term of patent 14 years
U.S. Cl. D21—134

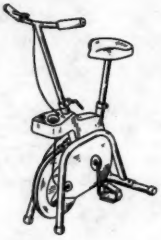


282,188
TOY TRUCK
Masumi Terui, Matsudo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Jun. 27, 1983, Ser. No. 508,489
Claims priority, application Japan, Dec. 29, 1983, 57-201733[U]
Term of patent 14 years
U.S. Cl. D21—140

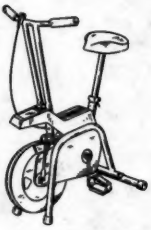


282,189
TOY BEAR FIGURE WITH BACKPACK
David M. Williams, New York, N.Y.; Richard A. Chase; John J. Fisher, III, both of Baltimore, Md., and Lois E. Kelly, Brooklyn, N.Y., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.
Filed Jul. 27, 1983, Ser. No. 517,602
Term of patent 14 years
U.S. Cl. D21—159

282,190
EXERCYCLE
Stanley Bell, 11 Knoll Rd., Port Washington, N.Y. 11050, and Gordon R. Perry, 121 W. 3rd St., New York, N.Y. 10012
Filed Aug. 9, 1983, Ser. No. 521,789
Term of patent 14 years
U.S. Cl. D21—194

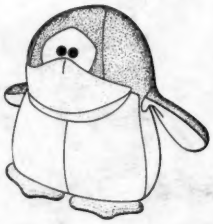


282,191
EXERCYCLE
Stanley Bell, 11 Knoll St., Port Washington, N.Y. 11050, and Gordon R. Perry, 121 W. 3rd St., New York, N.Y. 10012
Filed Aug. 9, 1983, Ser. No. 521,790
Term of patent 14 years
U.S. Cl. D21—194



282,192
TENT
Louis Grenier, 134 Laurier St. West, Montreal, Canada
Filed Jul. 13, 1983, Ser. No. 513,442
Term of patent 14 years
U.S. Cl. D21—253

282,193
STUFFED TOY FIGURE
Keiji Sasaki, No. 10-42, Kami-Osaki 3-chome, Shinagawa-ku, Tokyo, Japan
Filed Sep. 20, 1983, Ser. No. 533,965
Term of patent 14 years
U.S. Cl. D21—160



282,194
SKI
Rudolf Ferch, Salzburg, Austria, assignor to Kastle Gesellschaft m.b.H., Hohenems, Austria
Filed Apr. 6, 1983, Ser. No. 482,703
Claims priority, application Austria, Oct. 15, 1982, 26629/414/1982
Term of patent 14 years
U.S. Cl. D21—229

282,195
HAND HELD SLINGSHOT OR SIMILAR ARTICLE
Florentino Garcia, 1501 E. Beech St., Yakima, Wash. 98901
Filed Sep. 22, 1983, Ser. No. 534,605
Term of patent 14 years
U.S. Cl. D22—4

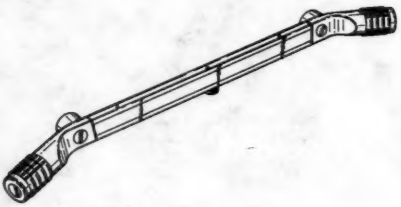
282,196
BROMINE DISPENSER FOR HOT TUBS
Arthur Jost, 687 Rte. 112, Patchogue, N.Y. 11772
Filed Feb. 7, 1983, Ser. No. 464,387
Term of patent 14 years
U.S. Cl. D23—3

282,197
FAUCET OR SIMILAR ARTICLE
Lee-Ping Hu, Hsintien, Taiwan, assignor to Jim Wu, Taipei, Taiwan
Filed Mar. 9, 1983, Ser. No. 473,738
Term of patent 14 years
U.S. Cl. D23—25

282,198
SHOWER HEAD
Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502
Filed Jul. 25, 1983, Ser. No. 517,242
Term of patent 14 years
U.S. Cl. D23—35

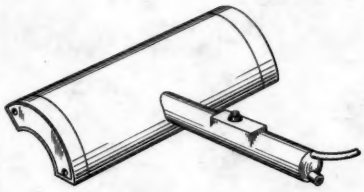
282,199
SHOWER HEAD
Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502
Filed Jul. 25, 1983, Ser. No. 517,243
Term of patent 14 years
U.S. Cl. D23—35

282,200
WALL SHOWER
Andreas Haug, Altensteig, Fed. Rep. of Germany, assignor to Hans Grohe GmbH & Co., Fed. Rep. of Germany
Filed Sep. 19, 1983, Ser. No. 533,807
Term of patent 14 years
U.S. Cl. D23—57

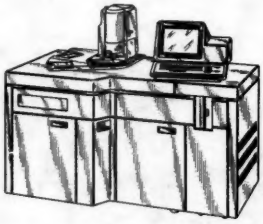


282,201
PEDESTAL LAVATORY
Donald W. Doman, Janesville, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Aug. 25, 1983, Ser. No. 526,451
Term of patent 14 years
U.S. Cl. D23—61

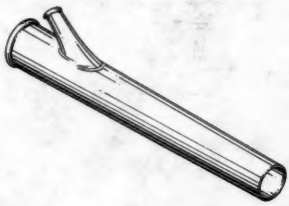
282,202
PORTABLE HEATER DEVICE
Russell R. Ellersick, 7925 Twin Oaks Dr., Citrus Heights, Calif. 95610
Filed Apr. 18, 1983, Ser. No. 485,862
Term of patent 14 years
U.S. Cl. D23—77



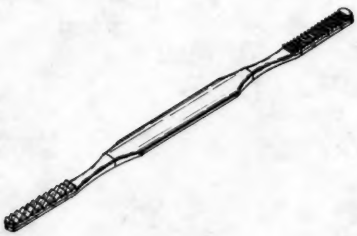
282,203
CHEMICAL ANALYZER
Bruce A. Leonard, Rochester, and Lawrence E. Hood, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 29, 1983, Ser. No. 509,090
Term of patent 14 years
U.S. Cl. D24—1.1



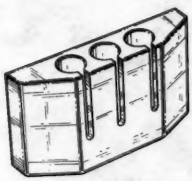
282,204
SPECULUM
Gregory C. Holt, P.O. Box 1611, Hamilton, Mont. 59840
Filed Apr. 5, 1982, Ser. No. 365,406
Term of patent 14 years
U.S. Cl. D24—18



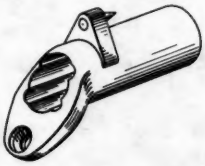
282,205
SURGICAL RASP
John A. Davison, and Robert J. Kellar, both of San Jose, Calif., assignors to Adler Instrument Company, Norcross, Ga.
Filed Aug. 30, 1983, Ser. No. 527,939
Term of patent 14 years
U.S. Cl. D24—26



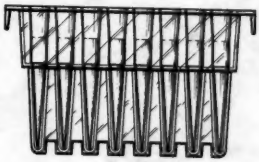
282,206
AMPOULE HOLDER
Stephen R. Roy, 106 Ustick St., Caldwell, Id. 83605, and Harry G. Schumacher, 287 Spring St., Ventura, Calif. 93001
Filed Jan. 24, 1983, Ser. No. 445,188
Term of patent 14 years
U.S. Cl. D24—31



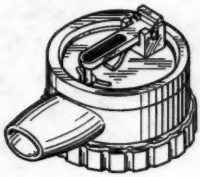
282,207
MEDICAL HOLEPLATE
Ragnar Kalen, Golfvagen 26, 181 31 Danderyd, Sweden
Filed Aug. 29, 1983, Ser. No. 527,274
Claims priority, application Sweden, Mar. 17, 1983, 83-0771
Term of patent 14 years
U.S. Cl. D24—33



282,208
PIPETTER TIP CARTRIDGE
Alan Lowry, Canton, Mass., assignor to Data Packaging Corporation, Cambridge, Mass.
Filed Feb. 7, 1983, Ser. No. 464,614
Term of patent 14 years
U.S. Cl. D24—55



282,209
INHALER
Robert E. Newell, Pinner, and Robert A. Fitzsimmons, Barnard Castle, both of England, assignors to Glaxo Group Limited, London, England
Filed Dec. 23, 1983, Ser. No. 564,932
Claims priority, application United Kingdom, Jun. 29, 1983, 1013826
Term of patent 14 years
U.S. Cl. D24—62



282,210
SELF-POWERED DROGUE LIGHT
Jerome Brillo, and Harry H. Dooley, both of Tucson, Ariz., assignors to TLS Systems, Inc., Tucson, Ariz.
Filed Apr. 15, 1983, Ser. No. 485,429
Term of patent 14 years
U.S. Cl. D26—28

282,211

FLUOROSCENT LANTERN

Chuen Tang, Cheung Hing Industrial Bldg., 6th & 7th Floors, 23 Tai Yip St., Kwun Tong, Kowloon, Hong Kong

Filed Feb. 18, 1983, Ser. No. 467,632

Claims priority, application United Kingdom, Oct. 11, 1982, 1009192

Term of patent 14 years

U.S. Cl. D26—42

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF JANUARY, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abacherli, Claudio, to Lonza Ltd. Process for the production of 4-alkoxyacetoacetic acid esters. 4,564,696, Cl. 560-53.000.

Abe, Osamu: *See*—
Mouri, Yasunori; and Abe, Osamu, 4,564,907, Cl. 364-431.100.

Abe, Rumiko: *See*—
Terashima, Shiro; Kimura, Yoshikazu; Suzuki, Michiyo; Matsumoto, Teruyo; and Abe, Rumiko, 4,564,674, Cl. 536-6.400.

Abe, Seiichi: *See*—
Watanabe, Hajime; Tanaka, Yoshio; and Abe, Seiichi, 4,564,462, Cl. 252-134.000.

Abel Pumpen GmbH: *See*—
Stahlkopf, Friedrich R. R., 4,564,340, Cl. 417-388.000.

Abend, Klaus: *See*—
Huschelrath, Gerhard; Abend, Klaus; and Orthen, Ursula, 4,564,809, Cl. 324-225.000.

Abramson, Noel W.: *See*—
Marchand, Paul A.; and Abramson, Noel W., 4,564,005, Cl. 128-66.000.

Abu Aktiebolag: *See*—
Moosberg, Borje S.; and Karlsson, Jarding U., 4,564,158, Cl. 242-220.000.

Acco Babcock Inc.: *See*—
Moon, Edward E., 4,564,100, Cl. 198-341.000.

ACF Industries, Incorporated: *See*—
Billingsley, Robert H.; Reed, George; and Schlobohm, Arnold, 4,563,957, Cl. 105-418.000.

Achtenberg, Irving; and Fleck, Otto W. Method of reinforcing concrete block foundation walls. 4,563,852, Cl. 52-743.000.

Ackerman, Galen R. Flush-mounted round bale mover for truck beds. 4,564,325, Cl. 414-24.500.

Ackermann, Gustav; Clostermeyer, Gerhard; and Muller, Werner, to CLAAS OHG. Round baler for forming bales of agricultural products. 4,563,854, Cl. 53-118.000.

Adachi, Ryouhei: *See*—
Fujimori, Yoshitsugu; Adachi, Ryouhei; Ebisawa, Hiroo; Kurachi, Yukio; and Koike, Masami, 4,564,232, Cl. 296-146.000.

Adams, James S. Tracer golf ball. 4,564,199, Cl. 273-213.000.

Adams, Johnnie E.; and Jamieson, Donald R., to United States of America, Energy. Bismaleimide compounds. 4,564,683, Cl. 548-521.000.

Adiletta, Joseph G., to Pall Corporation. Gas permeable, water and oil resistant composite structure. 4,564,552, Cl. 428-246.000.

Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., to AMP Incorporated. Electrical connector transfer nest. 4,563,810, Cl. 29-749.000.

Adolfsson, Bengt O., to Kommanditbolaget Aldolf. Arrangement for supplying gas to a liquid in a container therefor. 4,564,126, Cl. 222-61.000.

Advanced Imaging Systems Ltd.: *See*—
Hallman, Robert W.; Langlais, Eugene L.; and Warner, Patrick G., 4,564,589, Cl. 430-524.000.

Aeroquip Corporation: *See*—
Fournier, Paul J. E., 4,563,795, Cl. 24-19.000.

Aerospace Corporation, The: *See*—
Janousek, Bruce K.; and Carscallen, Richard C., 4,564,425, Cl. 204-34.500.

Affonso, Octavio F.: *See*—
Koch, Rudolf K.; and Affonso, Octavio F., 4,564,045, Cl. 137-625.430.

AGA, A.B.: *See*—
Stavlo, Lars G., 4,564,109, Cl. 206-597.000.

Agarkov, Gavriil D.: *See*—
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.

Agee, John M.; and King, Francis C., to Agee, John M. Hand holding apparatus for hand surgery. 4,564,180, Cl. 269-75.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Hofmann, Wilfried; Lusch, Herbert; Rauffer, Walter; Zieran, Eberhard; and Sylla, Jurgen, 4,564,276, Cl. 353-55.000.
Nagel, Erich, 4,564,101, Cl. 198-346.200.
Pertzsch, Albert; Liepold, August; Brunner, Hubert; and Zeroni, Ludwig, 4,564,120, Cl. 220-337.000.

Agfa-Gevaert, N.V.: *See*—
Uytterhoeven, Herman J.; De Winter, Walter F.; and Marien, August M., 4,564,574, Cl. 430-115.000.

Ahmed, Bashir M., to Amchem Products Inc. Autodeposition coating with reduced cleaner exudate. 4,564,536, Cl. 427-327.000.

Ahn, Byong-Ho: *See*—
Carroll, Raymond; and Ahn, Byong-Ho, 4,563,909, Cl. 74-5.500.

Aimono, Yuji: *See*—
Nishigaki, Hisashi; and Aimono, Yuji, 4,564,646, Cl. 522-13.000.

Air Refiner, Inc.: *See*—
Bibber, John W., 4,564,465, Cl. 252-389.00R.

Aisan Kogyo Kabushiki Kaisha: *See*—
Kitamura, Sunao, 4,564,481, Cl. 261-39.00A.
Takada, Shigetaka; Makimura, Toshiro; and Matsubara, Mamoru, 4,564,145, Cl. 239-585.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Momose, Yutaka, 4,564,202, Cl. 277-3.000.

Aizawa, Masanori: *See*—
Taira, Kazuo; Sakamoto, Akira; Yamada, Muneki; Aizawa, Masanori; and Ueno, Hiroshi, 4,564,541, Cl. 428-35.000.

Ajinomoto Co., Inc.: *See*—
Sugiyama, Katsumi; Takeda, Hideo; Sato, Hiroko; Nonaka, Yuji; Oyama, Kiyotaka; and Kubo, Masashige, 4,564,471, Cl. 260-112.50K.

Akahane, Atsushi: *See*—
Ueda, Ikuo; Nagano, Masanobu; and Akahane, Atsushi, 4,564,621, Cl. 514-357.000.

Akamatsu, Masafumi: *See*—
Shimizu, Tetsuo; and Akamatsu, Masafumi, 4,564,652, Cl. 524-805.000.

Akatsuka, Takao; Nakano, Jiro; Ishibashi, Takao; and Kawaguchi, Masao, to Toyota Jidosha Kabushiki Kaisha. Engine air/fuel ratio control method and system selectively providing feedback control or open loop control according to oxygen sensor heating condition. 4,563,991, Cl. 123-440.000.

Akerson, Steven C., to Heart Interface Corporation. Inverter with improved operating efficiencies. 4,564,896, Cl. 363-56.000.

Akimoto, Hisayoshi, to Ikeda Bussan Co., Ltd. Vehicle seat cushion. 4,564,239, Cl. 297-452.000.

Akiyama, Atsuko: *See*—
Sakai, Hiroyuki; Takemoto, Toyoki; Kawakita, Kenji; Fujita, Tsutomu; and Akiyama, Atsuko, 4,563,807, Cl. 29-591.000.

Akiyama, Hiroshi. Catheter. 4,564,361, Cl. 604-265.000.

Akiyama, Hiroyuki: *See*—
Tashiro, Korefumi; and Akiyama, Hiroyuki, 4,564,774, Cl. 307-479.000.

Akiyama, Shinichi: *See*—
Yamamoto, Haruhisa; and Akiyama, Shinichi, 4,564,703, Cl. 562-534.000.

Akiyoshi, Masataka: *See*—
Masaichiro, Masui, 4,564,475, Cl. 260-398.500.

Akutagawa, Susumu: *See*—
Yagi, Misao; and Akutagawa, Susumu, 4,564,708, Cl. 568-14.000.

Akzo NV: *See*—
Gerlach, Klaus; and Kessler, Erich, 4,564,488, Cl. 264-41.000.
Schmitz, Franz J.; Wollbeck, Rudi; and Klein, Wolfgang, 4,564,373, Cl. 55-16.000.
Wieringa, Johannes H.; and van der Vlugt, Frans A., 4,564,698, Cl. 560-109.000.

Albert Schnetz, Firma: *See*—
Schnetz, Rainer, 4,564,176, Cl. 267-64.110.

Albin, Loren D., to Minnesota Mining and Manufacturing Company. Fluorocarbon elastomer. 4,564,662, Cl. 526-247.000.

Albrecht, Ernst, to Pfaff Industriemaschinen GmbH. Sewing machine having a drive for a work clamp. 4,563,960, Cl. 112-121.150.

Alesi, Thomas W., to Draf Industries, Inc. Air conditioning compressor retaining ring remover tool. 4,563,804, Cl. 29-229.000.

Alexandrov, Adolf M.; Tsimbler, Jury A.; Iljukhin, Vitaly G.; Yashin, Jury A.; and Kiselev, Igor V., to Spetsialnoe Konstruktorskoe Bjuro "Transprogress". Gate of the pipe-line of a pneumatic conveyer used for transporting containers. 4,564,318, Cl. 406-192.000.

Alfa Romeo Auto S.p.A.: *See*—
Paludetto, Ferdinando, 4,564,217, Cl. 280-804.000.

Alfrey, Norval K. Process and apparatus for simultaneous material granulation and classification. 4,564,505, Cl. 422-209.000.

Ali, Majid; and Ramanarayanan, Madhava P. Allergens and antibodies from allergen extracts and pooled serum. 4,564,600, Cl. 436-513.000.

Allen, R. Daniel; and Fink, Howard F. Adjustable support system. 4,564,164, Cl. 248-118.000.

Alley, Lynn D.; Alley, Stephen W.; Sadlier, William K.; and Burton, Richard A., to Legacy Group Research and Development Limited Partnership, The. Wrap-around auxiliary keyboard. 4,564,751, Cl. 235-146.000.

Alley, Stephen W.: *See*—
Alley, Lynn D.; Alley, Stephen W.; Sadlier, William K.; and Burton, Richard A., 4,564,751, Cl. 235-146.000.

Allied Corporation: *See—*
Hochberg, Arie; and Mason, Charles D., 4,564,650, Cl. 524-288.000.
Lang, Donald D., 4,564,723, Cl. 174-36.000.
Parks, Kevin B., 4,563,912, Cl. 74-493.000.
Spaargaren, Robert, 4,564,090, Cl. 188-331.000.

Allihn, Rudiger O. M., to Eager Weaver (Proprietary) Limited. Weaving device. 4,564,049, Cl. 139-33.000.

Alliot-Lugaz, Maurice: *See—*
Cassat, Robert; and Alliot-Lugaz, Maurice, 4,564,424, Cl. 204-20.000.

Allo, Vincent F.; and Stafford, Donald C., to Chicago Bridge & Iron Company. Falling film heat exchanger with member to distribute liquid on external surfaces of tubes. 4,564,064, Cl. 165-118.000.

Alphatime Ltd. Co., Inc.: *See—*
Revici, Emanuel, 4,564,634, Cl. 514-558.000.

Altadonna, James. Medication for pain relief in joints of humans. 4,564,521, Cl. 424-150.000.

Altech Industries, Inc.: *See—*
Long, Charles E., 4,563,851, Cl. 52-656.000.

Altenschopfer, Theodor; Giesen, Walter; Schumann, Klaus; and Streschnak, Benno, to Henkel Kommanditgesellschaft auf Aktien. Product and process for scenting packaging materials. 4,564,535, Cl. 427-285.000.

Althaus, Horst: *See—*
Spindeler, Heinrich; Wackerbarth, Folkard; Kuhlmann, Horst; Dohle, Helmut; and Althaus, Horst, 4,564,420, Cl. 202-139.000.

Aluminum Company of America: *See—*
Eckert, Charles E., 4,563,895, Cl. 73-61.00R.

ALZA Corporation: *See—*
Zaffaroni, Alejandro; and Wong, Patrick S. L., 4,564,364, Cl. 604-897.000.

Ambo, Tsugio: *See—*
Kato, Shinichi; Tamura, Takeshi; Ambo, Tsugio; and Shimazawa, Katsuji, 4,564,252, Cl. 339-91.00R.

Amchem Products Inc.: *See—*
Ahmed, Bashir M., 4,564,536, Cl. 427-327.000.

American Can Company: *See—*
Bressan, Renato J.; Halasz, Andrew; and Maccherone, Lawrence S., 4,563,887, Cl. 72-84.000.

American Cyanamid Co.: *See—*
Woodruff, Keith; and Brandli, Eugene, 4,563,836, Cl. 43-131.000.

American Manufacturing Company, Inc.: *See—*
Stanton, Robert L., 4,563,869, Cl. 57-211.000.

American Standard Inc.: *See—*
Briner, Clifton F.; Bocchini, William R.; and Wilcockson, Brian, 4,564,445, Cl. 210-167.000.
Briner, Clifton F.; Bocchini, William R.; and Wilcockson, Brian, 4,564,454, Cl. 210-668.000.
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,564,446, Cl. 210-167.000.

American Zettler, Inc.: *See—*
Lowe, Ronnie D., 4,564,828, Cl. 335-128.000.

AMP Incorporated: *See—*
Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., 4,563,810, Cl. 29-749.000.

Ampex Corporation: *See—*
Evans, Lawrence J.; Sheikh, Junaid; Stock, Rodney D.; and Turkowski, Kenneth E. J., 4,564,915, Cl. 364-521.000.

Anaheim Foundry Company: *See—*
Sills, Andy B.; and Sills, Cecil M., 4,564,220, Cl. 285-236.000.

Anan, Yoshiaki: *See—*
Tokunaga, Toshimichi; Kanai, Seita; and Anan, Yoshiaki, 4,564,214, Cl. 280-707.000.

Anderson, Andrew W., deceased (by Anderson, Miriam, executrix), to Scandia Packaging Machinery Co. Article feeding and stacking mechanism. 4,564,104, Cl. 198-422.000.

Anderson, Miriam, executrix: *See—*
Anderson, Andrew W., deceased, 4,564,104, Cl. 198-422.000.

Anderson, Terrence J.: *See—*
Coughlan, Raymond T.; and Anderson, Terrence J., 4,564,010, Cl. 128-156.000.

Andreas Kufferath GmbH & Co. KG: *See—*
Odenthal, Heinz, 4,564,051, Cl. 139-425.00A.

Andreev, Andrei D.: *See—*
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.

Andres, Rudolf, to Daimler-Benz Aktiengesellschaft. Radiator including a cover therefor. 4,564,060, Cl. 165-98.000.

Andrew Corporation: *See—*
Wiesenfarth, Hans J.; and Dienes, Geza, 4,564,826, Cl. 333-249.000.

Angalet, Stevan A.: *See—*
Watson, Francis L.; Angalet, Stevan A.; and Carlson, Richard A., 4,564,529, Cl. 426-570.000.

ANT Nachrichtentechnik GmbH: *See—*
Rauth, Erich; and Form, Ernst, 4,564,061, Cl. 165-104.330.

Anthony Industries, Inc.: *See—*
Mikuski, John J., 4,564,554, Cl. 428-311.900.

Anzani, Renato: *See—*
Buzzanca, Giovanni; Ronchetti, Camillo; Uberti, Franco; and Anzani, Renato, 4,564,436, Cl. 204-400.000.

Aoi, Masahiro: *See—*
Kataoka, Yushin; Matsuda, Masaaki; Ochi, Kenji; and Aoi, Masahiro, 4,564,659, Cl. 525-328.200.

Aoki, Hachiro, to Diesel Kiki Co., Ltd. Control system and method for comprex supercharger. 4,563,997, Cl. 123-559.000.

Aoki, Kozo; Ono, Michio; and Nakazyo, Kiyoshi, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,564,586, Cl. 430-505.000.

Aoki, Nobuhiko: *See—*
Oshida, Yoshitada; Makihara, Hiroshi; and Aoki, Nobuhiko, 4,564,296, Cl. 356-381.000.

Aoki, Yoshinobu: *See—*
Shibata, Masatoshi; Uchiyama, Soichi; and Aoki, Yoshinobu, 4,564,643, Cl. 518-717.000.

Apple Computer, Inc.: *See—*
Woolley, Richard N.; Glover, Neal; and Williams, Richard, 4,564,941, Cl. 371-2.000.

Arafune, Yasunari, to Tokyo Shibaura Denki Kabushiki Kaisha. Video tape recorder having improved audio characteristics. 4,564,868, Cl. 360-19.100.

Arai, Makoto: *See—*
Tani, Hideki; Arai, Makoto; Sasaki, Takayuki; Hayama, Kazuhide; and Yamashita, Akira, 4,564,560, Cl. 428-411.100.

Arakawa, Tatsumi; Ozaki, Masaru; and Ikeda, Yukihiro, to Director-General of Agency of Industrial Science and Technology. Process for preparation of polyvinylene sulfide. 4,564,668, Cl. 528-388.000.

Araki, Masakatsu, to Matsushita Electric Works, Ltd. Hair curler. 4,564,032, Cl. 132-33.00R.

Aries Electronics, Inc.: *See—*
Sinclair, William Y., 4,564,253, Cl. 339-97.00C.

Arikawa, Junichi: *See—*
Kokubo, Eiichi; Arikawa, Junichi; Goi, Kowichi; and Imura, Shinichi, 4,564,140, Cl. 232-57.500.

Arimoto, Akira: *See—*
Tatsuno, Kimio; and Arimoto, Akira, 4,564,268, Cl. 350-409.000.

Arnegger, Richard E. Electrical bell type motor. 4,564,781, Cl. 310-261.000.

Arnold, Lewis R., to Bigheart Pipe Line Corporation. Gauger's aid for use in sampling bottom sediment conditions in oil storage tanks. 4,563,896, Cl. 73-290.00R.

Arnold, Richard F.; Cocke, John; Coppersmith, Don; Seigler, Adrian E.; and Strait, Gary E., to International Business Machines Corporation. Error correcting scheme. 4,564,944, Cl. 371-37.000.

Arrow Specialty Company: *See—*
Geary, William C.; Mirsaiidi, Mohammad V.; Redfern, Timothy; and Wolfe, David W., 4,563,987, Cl. 123-179.00B.

Arvai, Laslzo: *See—*
Ecsery, Zoltan; Somfai, Eva; Hermann nee Voros, Judit; Nagy, Lajos; Szabo, Gabor; Orban, Otto; and Arvai, Laslzo, 4,564,706, Cl. 564-376.000.

Arzouman, Harry H., to Safe-T-Jack, Inc. Method of using a hydraulic power unit to control a mechanical jack. 4,564,172, Cl. 254-1.000.

Asaba, Tsutomu: *See—*
Ohgushi, Masuhito; Ohtsuka, Hiroshi; Asaba, Tsutomu; Hoshi, Hironobu; Goshokubo, Kenichi; Wakui, Takeo; Ishii, Kiminori; Ohno, Masashi; and Okada, Yukio, 4,564,557, Cl. 428-333.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Komoto, Shinsuke, 4,564,264, Cl. 350-255.000.

Asahi, Satoshi: *See—*
Hayashi, Hiroshi; Matono, Koichi; Asahi, Satoshi; and Uoi, Michitake, 4,564,647, Cl. 523-211.000.

Asberg, Sture L., to SKF Nova AB. Hub bearing unit. 4,564,243, Cl. 301-124.00R.

Ashland Oil, Inc.: *See—*
Reiter, Stephen E., 4,564,699, Cl. 560-214.000.

AT&T Bell Laboratories: *See—*
Karabinis, Peter D.; and Osborne, Thomas L., 4,564,952, Cl. 375-14.000.
LoCicero, Joseph L.; Pazarci, Melih; and Rzeszewski, Theodore S., 4,564,857, Cl. 358-11.000.
Olsson, Nils A.; and Tsang, Won-Tien, 4,564,946, Cl. 372-20.000.

AT&T Technologies, Inc.: *See—*
Cranston, Benjamin H., 4,563,811, Cl. 29-827.000.
Kasprzyk, Marlon Z., 4,564,110, Cl. 209-544.000.
Wong, Ching-Ping, 4,564,562, Cl. 428-447.000.

Ateliere des Charmilles, S.A.: *See—*
Bonga, Benno I., 4,563,800, Cl. 29-26.00A.

Atherton, Peter W.; and Spector, George. Tree push. 4,564,173, Cl. 254-133.00R.

Atkin, Norman M. Arm wrestling machine. 4,564,191, Cl. 272-67.000.

Atlas Copco Aktiebolag: *See—*
Henriksson, Stig R., 4,563,938, Cl. 91-25.000.

Atochem (Societe Anonyme Styled): *See—*
Coplot, Daniel; and Picon, Georges, 4,564,453, Cl. 210-614.000.

Attwood, Michael J.: *See—*
Wheable, Desmond; and Attwood, Michael J., 4,564,831, Cl. 340-347.0AD.

Aucoin, Raymond U. Fish holding device. 4,563,833, Cl. 43-54.100.

Aupac Co., Ltd.: *See—*
Yoshida, Makoto, 4,564,778, Cl. 310-177.000.

Austin, Frederick D.; and Watson, Peter, to British Petroleum Company p.l.c., The. Process for depositing a silica coating on a metal surface. 4,564,537, Cl. 427-376.400.

Australian Transcenders International Pty. Ltd.: *See—*
Pagett, Jeffery M., 4,564,080, Cl. 180-8.200.

Auto Id Inc.: *See*—
Cafferty, Terrance, 4,563,948, Cl. 101-128.000.
Autoflug GmbH: *See*—
Baden, Hans; Kuhnemann, Klaus; Sedlmayr, Gerhard; Straszewski, Klaus; and Zeumer, Monika, 4,564,219, Cl. 280-808.000.
Avery International Corporation: *See*—
Chang, Man-Chium; Mao, Chung-Ling; and Vargas, Richard R., 4,564,664, Cl. 524-826.000.
Awano, Toshiaki, to Mitsubishi Denki Kabushiki Kaisha. Circuit for monitoring the frequency of signal for controlling choppers of electric cars. 4,564,837, Cl. 340-825.300.
Azbukin, Valery D.: *See*—
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.
B. E. M. Wientjes B.V.: *See*—
Dijkhuizen, Okko K., 4,563,782, Cl. 4-542.000.
B. F. Goodrich Company, The: *See*—
Worcester, Winthrop S., 4,564,542, Cl. 428-58.000.
Baacke, Michael; and Kleinschmit, Peter, to Degussa Aktiengesellschaft. Process for the production of coarse particle mordenite. 4,564,512, Cl. 423-328.000.
Baba, Kenji: *See*—
Hiraoka, Masakatsu; Tsumura, Kazushi; Baba, Kenji; Nogita, Shunsuke; and Mori, Shunji, 4,564,444, Cl. 210-96.100.
Baba, Masayoshi: *See*—
Hamane, Masumi; Onda, Takanori; and Baba, Masayoshi, 4,564,081, Cl. 180-229.000.
Babbitt, Richard W.: *See*—
Stern, Richard A.; and Babbitt, Richard W., 4,564,000, Cl. 125-13.00R.
Babcock Wire Equipment Limited: *See*—
Vaughan, Anthony J., 4,564,347, Cl. 425-79.000.
Bacon, Jeffery E.; Craig, James E.; and Pedersen, Mark K., to Robbins & Craig Welding & Mfg. Co. Continuous contact plating apparatus. 4,564,430, Cl. 204-206.000.
Baden, Hans; Kuhnemann, Klaus; Sedlmayr, Gerhard; Straszewski, Klaus; and Zeumer, Monika, to Autoflug GmbH. Apparatus for adjusting the height of the upper fitting for the shoulder belt in a safety belt system. 4,564,219, Cl. 280-808.000.
Baglione, Richard A. Super-heat monitoring and control device for air conditioning refrigeration systems. 4,563,878, Cl. 62-115.000.
Bagnall, Brian G.; and Gyurik, Robert J., to SmithKline Beckman Corporation. Delayed action assembly. 4,564,363, Cl. 604-891.000.
Bailes, David R.: *See*—
Young, Ian R.; and Bailes, David R., 4,564,813, Cl. 324-311.000.
Baker Oil Tools, Inc.: *See*—
Underdown, David R.; and Glaze, O. Howard, 4,564,459, Cl. 252-8.55R.
Bald, Wilfried; Rommen, Hans; and Stoy, Erich, to SMS Schloemann-Siemag AG. Six-high roll stand with braced and removable working rolls. 4,563,888, Cl. 72-243.000.
Ballough, Douglas M.; and Higginbotham, Howard L., to Boeing Company, The. Method for machining three dimensional contours utilizing a numerically controlled lathe. 4,564,914, Cl. 364-475.000.
Banerjee, Indrajit: *See*—
Schuller, Ivan K.; Ketterson, John B.; and Banerjee, Indrajit, 4,564,564, Cl. 428-662.000.
Banks, Ridgway M. Linear output nitinol engine. 4,563,876, Cl. 60-527.000.
Bantien, Jurgen, to Hauni-Werke Korber & Co. KG. Apparatus for manipulating empty and filled trays for cigarettes or the like between making and processing machines. 4,564,329, Cl. 414-403.000.
Baranchikov, Vladimir M.: *See*—
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.
Barberis, Dario, to WABCO Westinghouse Compagnia Freni S.p.A. Parking brake control apparatus. 4,564,245, Cl. 303-15.000.
Barda, Henry J., to Ethyl Corporation. Flame retardant for polyurethanes. 4,564,468, Cl. 252-609.000.
Barillec, Christian; Janvier, Dominique; and Bonneton, Marc. Method of packing collected objects and packing station therefor. 4,563,861, Cl. 53-453.000.
Barlow, Richard A.; and Logan, Eugene T. Pizza pan. 4,563,946, Cl. 99-450.000.
Barmag Barmer Maschinenfabrik AG: *See*—
Dammann, Peter, 4,563,799, Cl. 28-272.000.
Barnett, Barry R. M., to TRW United-Carr Limited. Retaining clip. 4,564,163, Cl. 248-71.000.
Barresi, Anthony J.; and Nelson, Leonard, to RCA Corporation. Chip carrier soldering tool. 4,564,135, Cl. 228-6.200.
Barzano', Piero, to IMS S.p.A. Device for joining together in a registered and/or abutting manner the ends of two paper or cardboard webs which unwind from two different wheels positioned on a reel star unit of two or more positions. 4,564,149, Cl. 242-58.100.
BASF Aktiengesellschaft: *See*—
Mueller, Herbert, 4,564,671, Cl. 528-416.000.
Seitz, Werner; Teschendorf, Hans-Jurgen; Michel, Alfred; Traut, Martin; Hofmann, Hans P.; and Kreiskott, Horst, 4,564,641, Cl. 514-650.000.
Bauer, Klaus: *See*—
Liebl, Rainer; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; and Bieringer, Hermann, 4,564,382, Cl. 71-88.000.
Bauer, Wilhelm; Berger, Josef; Dahm, Horst; Klemm, Hans; Schmid, Peter; Seidl, Horst; and Walter, Dietmar, to Daimler-Benz Aktiengesellschaft. Control unit for a motor vehicle which can be accommodated in a trim component. 4,564,883, Cl. 361-334.000.
Baugh, Benton F., to Smith International, Inc. Emergency release for subsea tool. 4,564,068, Cl. 166-123.000.
Baum, Steven A.; Gallaro, Anthony V.; Hovey, Frederick A.; Rehkopf, Charles H.; and Sember, William J., to North American Philips Consumer Electronics Corp. External neck charge dissipation means for an in-line color cathode ray tube. 4,564,786, Cl. 313-479.000.
Baumeister, Hans-Peter, to Eastman Kodak Company. Zoned equalization for a magnetic disc. 4,564,869, Cl. 360-46.000.
Baun, Kenneth W., to Charlton Associates. Method and apparatus for disc position centering. 4,563,824, Cl. 33-568.000.
Baxter, Ronald D.; and Freud, Paul J., to General Signal Corporation. Humidity sensing element. 4,564,882, Cl. 361-286.000.
Bayer Aktiengesellschaft: *See*—
Becher, Dieter; Konig, Christian; Tiemann, Eckhard; Czwalinna, Hans; and Hagen, Wilhelm, 4,564,513, Cl. 423-415.00A.
Dicke, Hans-Rudolf; Schmidt, Manfred; El-Sayed, Aziz; Biskup, Ulrich; Bottenbruch, Ludwig; and Freitag, Dieter, 4,564,669, Cl. 528-173.000.
Dickore, Karlfried; Engels, Hans D.; Kratzer, Hans; and Merz, Walter, 4,564,704, Cl. 562-577.000.
Elbert, Alfred; Behrenz, Wolfgang; and Krehan, Ingomar, 4,564,631, Cl. 514-521.000.
Habich, Dieter, 4,564,473, Cl. 260-245.400.
Klauke, Erich; and Kuhle, Engelbert, 4,564,478, Cl. 260-455.00R.
Nonn, Konrad; Wolf, Karlheinz; Haas, Johannes; and Paulat, Volker, 4,564,632, Cl. 514-522.000.
Rolf, Meinhard; Neeff, Rutger; Muller, Walter; and Hederich, Volker, 4,564,680, Cl. 546-155.000.
Salzburg, Herbert; Hajek, Manfred; and Meyborg, Holger, 4,564,645, Cl. 521-159.000.
Serini, Volker; Lindner, Christian; Peters, Horst; and Nising, Wolfgang, 4,564,654, Cl. 525-67.000.
Streissle, Gert; Plempel, Manfred; Paessens, Arnold; Holmwood, Graham; and Buchel, Karl H., 4,564,622, Cl. 514-383.000.
Bayerische Motoren Werke AG: *See*—
Weishaupt, Walter, 4,563,988, Cl. 123-196.00S.
BBC Brown, Boveri & Company Limited: *See*—
Buhler, Karl, 4,564,950, Cl. 373-108.000.
Buhler, Karl, 4,564,951, Cl. 373-108.000.
Bean, Ronnie A.: *See*—
Cain, C. Dean, Jr.; and Bean, Ronnie A., 4,563,830, Cl. 43-4.500.
Becher, Dieter; Konig, Christian; Tiemann, Eckhard; Czwalinna, Hans; and Hagen, Wilhelm, to Bayer Aktiengesellschaft. Process for the production of carbon monoxide. 4,564,513, Cl. 423-415.00A.
Becherer, Johannes: *See*—
Kussmaul, Ulrich; Becherer, Johannes; Handte, Reinhard; and Muller, Rolf, 4,564,682, Cl. 548-169.000.
Bechthold, Horst; Fischer, Heinz J.; and Schulte, Wolfgang, to Bucksu-Walther Aktiengesellschaft. Method for removing nitrogen oxides from waste gases. 4,564,510, Cl. 423-235.000.
Becker, Karl-Heinz: *See*—
Hergt, Peter; Nicklas, Alexander; and Becker, Karl-Heinz, 4,564,334, Cl. 415-199.300.
Becker, Lorenz: *See*—
Kunde, Klaus; Grimm, Helmut; and Becker, Lorenz, 4,563,884, Cl. 66-93.000.
Beckman Instruments, Inc.: *See*—
Parkes, Christopher W.; and Franklin, Robert C., 4,564,795, Cl. 318-314.000.
Beeke, Herbert: *See*—
Kohnlechner, Rainer; Beeke, Herbert; and Suckow, Hans, 4,563,903, Cl. 73-727.000.
Beeland, William D., to Lummus Industries, Inc. Self-cleaning roller gin. 4,563,794, Cl. 19-48.00R.
Beer, Michael: *See*—
Dorsch, Heinz; and Beer, Michael, 4,563,985, Cl. 123-90.310.
Beghelli, Benito: *See*—
Pellegrini, Antonio; and Beghelli, Benito, 4,564,553, Cl. 428-296.000.
Begley, William J., to Eastman Kodak Company. Naphthoquinone redox dye-releasers. 4,564,577, Cl. 430-223.000.
Behrenz, Wolfgang: *See*—
Elbert, Alfred; Behrenz, Wolfgang; and Krehan, Ingomar, 4,564,631, Cl. 514-521.000.
Belich, Daniel E. Beverage dispensing system and tap. 4,564,128, Cl. 222-135.000.
Bell, David D.; and Dobson, Gary A., to Harris Graphics Corporation. Apparatus for determining image areas from films and plates. 4,564,290, Cl. 356-73.000.
Bennett, Larry P., to Lambda Corporation. Method and apparatus for making a continuous length of tubing having foamed plastic walls. 4,564,487, Cl. 264-40.700.
Bennett, Raymond E.: *See*—
Stull, Dean P.; and Bennett, Raymond E., 4,563,973, Cl. 116-218.000.

Benteler, Hubertus; and Olszewski, Egon, to Benteler-Werke AG. Method and apparatus for the production of exhaust pipes for automotive vehicles. 4,563,802, Cl. 29-157.00R.

Benteler-Werke AG: *See—*
Benteler, Hubertus; and Olszewski, Egon, 4,563,802, Cl. 29-157.00R.

Berbalk, Hermann, to Oerlikon-Boehringer GmbH. Swirl apparatus. 4,564,323, Cl. 409-200.000.

Beresik, Gayland S.: *See—*
Fecik, Michael T.; Cannon, Gary V.; and Beresik, Gayland S., 4,564,380, Cl. 65-163.000.

Beresniewicz, Aleksander, to Du Pont de Nemours, E. I., and Company. Tertiary perfluoroalkoxides as surfactants in PTFE dispersion polymerization. 4,564,661, Cl. 526-212.000.

Berfield, Robert C., to Shop-Vac Corporation. Hose end holder. 4,563,789, Cl. 15-323.000.

Berger, Josef: *See—*
Bauer, Wilhelm; Berger, Josef; Dahm, Horst; Klemm, Hans; Schmid, Peter; Seidl, Horst; and Walter, Dietmar, 4,564,883, Cl. 361-334.000.

Bergling, Jan K. A.; and Widenback, Ralph H., to TRIO-LENG Pac System AB. Method and apparatus for stretch film wrapping of goods aggregates. 4,563,857, Cl. 53-399.000.

Berkey, Harley: *See—*
Shrock, Fred J.; and Berkey, Harley, 4,563,784, Cl. 5-37.00R.

Bernard, Walter; and Langner, Klaus, to Bodenseewerk Geratetechnik GmbH. Ring resonator and method of forming. 4,564,271, Cl. 350-622.000.

Berol Kemi AB: *See—*
Skold, Rolf O.; von Dahn, Lars-Gosta; and Sterky, Anna K., 4,564,461, Cl. 252-32.500.

Bertelsen, John C. Filter apparatus for high speed printers. 4,563,943, Cl. 98-115.100.

Bertram, Klaus D.: *See—*
Kluting, Bernd; and Bertram, Klaus D., 4,564,236, Cl. 297-344.000.

Bessire, Robert W.: *See—*
Lancaster, Eldon R.; Guest, Manual T.; and Bessire, Robert W., 4,564,732, Cl. 200-307.000.

Best, Steven A., to Exxon Research & Engineering Co. Polymerization catalyst, production and use. 4,564,606, Cl. 502-117.000.

Best, Walter, to Thomas Josef Heimbach GmbH & Co. Wet-pressing belt for paper machines. 4,564,551, Cl. 428-222.000.

Bethell, Michael R.; Gaines, Michael G.; Mowat, James F., Jr.; Wheeler, Roger D.; and Woidke, Richard P., to Monroe Auto Equipment Company. Gas pressurized shock absorber assembly. 4,564,138, Cl. 228-176.000.

Betz Laboratories, Inc.: *See—*
Harpel, William L.; Purnell, Deborah L.; and Pilny, Richard J., 4,564,464, Cl. 252-181.000.

Beyer, Joachim: *See—*
Beyer, Walter; and Beyer, Joachim, 4,563,961, Cl. 112-222.000.

Beyer, Walter; and Beyer, Joachim, to Zimmerman, Jos. Tufting needle. 4,563,961, Cl. 112-222.000.

Bianchi, Edward A.: *See—*
Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., 4,563,810, Cl. 29-749.000.

Bibber, John W., to Air Refiner, Inc. Corrosion inhibition additive for fluid conditioning. 4,564,465, Cl. 252-389.00R.

Bienstman, Luc A., to International Standard Electric Corporation. Electronic power overload protection circuit. 4,564,879, Cl. 361-98.000.

Bieringer, Hermann; Burstell, Helmut; Handte, Reinhard; Kocher, Helmut; and Schulze, Ernst-Friedrich, to Hoechst Aktiengesellschaft. Increase of carbohydrate accumulation in plants by means of substituted derivatives of phenoxyalkanoic acids and cyclohexanediones. 4,564,381, Cl. 71-88.000.

Bieringer, Hermann: *See—*
Liebl, Rainer; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; and Bieringer, Hermann, 4,564,382, Cl. 71-88.000.

Bigheart Pipe Line Corporation: *See—*
Arnold, Lewis R., 4,563,896, Cl. 73-290.00R.

Biller, Victor; and Faessler, Adelmar, to Figgie International Inc. Rotatable valve assembly. 4,564,044, Cl. 137-625.240.

Billeter, Henry R., deceased (by Billeter, Lucille, administratrix), to Sloan Valve Company. Combined reservoir and pipe hanger for railroad brakes. 4,564,246, Cl. 303-85.000.

Billeter, Lucille, administratrix: *See—*
Billeter, Henry R., deceased, 4,564,246, Cl. 303-85.000.

Billiet, Colin T., to Domnick Hunter Filters Limited. Filter element and method of making a filter element. 4,564,376, Cl. 55-486.000.

Billingsley, Robert H.; Reed, George; and Schlobohm, Arnold, to ACF Industries, Incorporated. Car bottom-to-side sill connection. 4,563,957, Cl. 105-418.000.

Binkley, Bruce L., to Energy Exchange Systems. Vehicle storage battery system. 4,564,797, Cl. 320-2.000.

Binks, Chester J., to Solar-Kist Corporation. Method of and means for combination design transfer and application of heat reactivatable adhesive. 4,564,406, Cl. 156-63.000.

Biomass International Inc.: *See—*
Neves, Alan M., 4,564,595, Cl. 435-163.000.

Biorkman, Ake: *See—*
Sikander, Ake; Biorkman, Ake; and Jonsson, Gunther, 4,564,174, Cl. 266-149.000.

BIP Chemical Limited: *See—*
Taylor, David, 4,564,667, Cl. 528-256.000.

Birch, Leon; and Hartmann, Jorgen, to Danavox A/S. Coupling for use in the securing of a hook-shaped sound part on a behind-the-ear hearing aid. 4,564,955, Cl. 381-69.000.

Birley, Stuart S.; and Roper, Philip E., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Fusion welding of aluminum alloys. 4,564,743, Cl. 219-137.00R.

Biskup, Ulrich: *See—*
Dicke, Hans-Rudolf; Schmidt, Manfred; El-Sayed, Aziz; Biskup, Ulrich; Bottenbruch, Ludwig; and Freitag, Dieter, 4,564,669, Cl. 528-173.000.

Bitsch, Kurt: *See—*
Heitzenroder, Hans F.; Wachter, Ernst; and Bitsch, Kurt, 4,564,107, Cl. 206-315.900.

Bjorlund, John. Post, such as a roadside marking post, a traffic sign post or a lamp post. 4,564,309, Cl. 404-10.000.

Black Clawson Company, The: *See—*
Bliss, Terry L., 4,564,443, Cl. 209-211.000.

Black, Daniel N., III: *See—*
Thelen, Edmund; Black, Daniel N., III; and Kiley, Thomas L., 4,564,310, Cl. 404-31.000.

Blaich, Michael, to Karl Mengele & Sohne GmbH & Co. Optoelectronic method and apparatus for measuring the bending angle of materials. 4,564,765, Cl. 250-561.000.

Blaske, Paul S.; Zimmerman, Larry D.; Calderon, Arthur; and Longworth, Leroy L., to Magnetic Peripherals, Inc. Process for fabricating negative pressure sliders. 4,564,585, Cl. 430-313.000.

Bleasdale, Stephen F., to Ofshred Limited. Paper shredding machine. 4,564,146, Cl. 241-236.000.

Bliss, Terry L., to Black Clawson Company, The. Reverse centrifugal cleaning of paper making stock. 4,564,443, Cl. 209-211.000.

Blohm & Voss AG: *See—*
Poppe, Horst, 4,563,972, Cl. 114-293.000.

Blower, Andrew W.: *See—*
Young, David M.; and Blower, Andrew W., 4,564,360, Cl. 604-183.000.

Blumle, Martin, to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co. KG. Paper converting machine vacuum cylinder. 4,564,418, Cl. 162-368.000.

Boardman, Peter W., to Deere & Company. Conveyor system for shear discharge. 4,563,926, Cl. 83-107.000.

Bocchini, William R.: *See—*
Briner, Clifton F.; Bocchini, William R.; and Wilcockson, Brian, 4,564,445, Cl. 210-167.000.
Briner, Clifton F.; Bocchini, William R.; and Wilcockson, Brian, 4,564,454, Cl. 210-668.000.
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,564,446, Cl. 210-167.000.

Bodenseewerk Geratetechnik GmbH: *See—*
Bernard, Walter; and Langner, Klaus, 4,564,271, Cl. 350-622.000.

Boeing Company, The: *See—*
Ballough, Douglas M.; and Higginbotham, Howard L., 4,564,914, Cl. 364-475.000.
Geithman, Glenn A.; and Chau, Albert W., 4,564,810, Cl. 324-230.000.
Ritter, James D., 4,564,543, Cl. 428-58.000.
Vermilye, Michael L., 4,564,160, Cl. 244-110.00B.

Boesen, Connie J. Stadium coat. 4,563,776, Cl. 2-85.000.

Bogossian, Armen: *See—*
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,564,446, Cl. 210-167.000.

Bohorquez, Luis A.: *See—*
Cleary, Michael M.; and Bohorquez, Luis A., 4,563,936, Cl. 89-11.000.

Bokon, William S. Mower means. 4,563,867, Cl. 56-249.000.

Bolmgren, Jan: *See—*
Nilsson, Kenth; and Bolmgren, Jan, 4,564,851, Cl. 346-140.00R.

Bolson, Frank J. Hydro-light. 4,564,889, Cl. 362-192.000.

Boltze, Karl-Heinz; Davies, Margaret A.; Junge, Bodo; Schuurman, Teunis; and Traber, Jorg, to Troponwerke GmbH & Co. Pyridoindole derivatives, compositions and use. 4,564,613, Cl. 514-222.000.

Bondarev, Boris I.: *See—*
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.

Bonga, Benno I., to Ateliere des Charmilles, S.A. Electrode tool storage magazine. 4,563,800, Cl. 29-26.00A.

Bonneton, Marc: *See—*
Barillec, Christian; Janvier, Dominique; and Bonneton, Marc, 4,563,861, Cl. 53-453.000.

Booher, Howard. Flat bed trailer structure. 4,564,233, Cl. 296-182.000.

Boot, Gordon P., to Plessey Overseas Limited. Digital electronic switching systems. 4,564,938, Cl. 370-85.000.

Borel, Georg, to Hermann Wangner GmbH & Co. KG. Double-layer fabric for paper machine screen. 4,564,052, Cl. 139-425.00A.

Borg-Warner Corporation: *See—*
Harnish, James R., 4,563,877, Cl. 62-80.000.

Borovikova, Stella I.: *See—*
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr

I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.

Bott, David C.; and White, Donald, to British Petroleum Company, p.l.c., The. Polyacetylene production. 4,564,492, Cl. 264-154.000.

Bottenbruch, Ludwig: *See*—
Dicke, Hans-Rudolf; Schmidt, Manfred; El-Sayed, Aziz; Biskup, Ulrich; Bottenbruch, Ludwig; and Freitag, Dieter, 4,564,669, Cl. 528-173.000.

Boulogne, Gerardus F.; and van Berkel, Bernardus P. J., to NCR Corporation. Data communication network and method of communication. 4,564,838, Cl. 340-825.500.

Bower, Lewis R. B., to Fletcher Sutcliffe Wild Limited. Control valve. 4,564,047, Cl. 137-627.500.

Bowering, Cyril J. Collapsible broadband directional antenna. 4,564,844, Cl. 343-881.000.

Boyd, Charles R., Jr., to Microwave Applications Group. Adjustable-phase-power divider apparatus. 4,564,824, Cl. 333-137.000.

Bozick, Thomas J. Shooting bench. 4,563,829, Cl. 42-94.000.

BP Chemicals Limited: *See*—
Collomb-Ceccarini, Joelle; and Crouzet, Pierre, 4,564,605, Cl. 502-110.000.

Brader, Kurt: *See*—
Grether, Paul; Brader, Kurt; and Keller, Bruno, 4,563,843, Cl. 52-172.000.

Braestrup, Claus T.: *See*—
Rahtz, Dieter; Huth, Andreas; Schmiechen, Ralph; Seidelmann, Dieter; Kehr, Wolfgang; Schneider, Herbert H.; and Braestrup, Claus T., 4,564,610, Cl. 514-80.000.

Brandli, Eugene: *See*—
Woodruff, Keith; and Brandli, Eugene, 4,563,836, Cl. 43-131.000.

Breithaupt, Jorg-Ulrich: *See*—
Geisler, Gottfried; and Breithaupt, Jorg-Ulrich, 4,563,904, Cl. 73-861.120.

Bressan, Renato J.; Kalasz, Andrew; and Maccherone, Lawrence S., to American Can Company. Controlled spin flow forming. 4,563,887, Cl. 72-84.000.

Breuer, Hans-Werner, to Crown Obrist AG. Closure cap for a container. 4,564,112, Cl. 215-246.000.

Brickner, Joseph L. Operators for sliding gates. 4,564,791, Cl. 318-16.000.

Brieger, Emmet F.: *See*—
Vann, Roy R.; and Brieger, Emmet F., 4,564,076, Cl. 175-4.520.

Briggs, John R.; O'Connor, George L.; and Robson, John H., to Union Carbide Corporation. Preparation of monoalkylene glycols in two stages. 4,564,715, Cl. 568-867.000.

Briggs, Jonathan, to Syntex (U.S.A.) Inc. Limited volume method for particle counting. 4,564,598, Cl. 436-501.000.

Briggs, Willard S., to Mostek Corporation. Multiplier with hybrid register. 4,564,920, Cl. 364-757.000.

Briner, Clifton F.; Bocchini, William R.; and Wilcockson, Brian, to American Standard Inc. Self-contained sewage waste disposal system. 4,564,445, Cl. 210-167.000.

Briner, Clifton F.; Bocchini, William R.; and Wilcockson, Brian, to American Standard Inc. Self-contained sewage waste disposal system. 4,564,454, Cl. 210-668.000.

Brinkhoff, Carl H., to Mine Safety Appliances Company. Universal ear plug. 4,564,009, Cl. 128-152.000.

Brisse, Jacques D.; and Chevalier, Jean-Pierre J. Radionavigation system having means for concealing distance and/or bearing information conveyed thereby. 4,564,840, Cl. 343-6.5LC.

British Aerospace Public Limited Co.: *See*—
Goddard-Watts, Mark, 4,563,812, Cl. 29-857.000.

British Petroleum Company p.l.c., The: *See*—
Austin, Frederick D.; and Watson, Peter, 4,564,537, Cl. 427-376.400.
Bott, David C.; and White, Donald, 4,564,492, Cl. 264-154.000.
Callaghan, Ian C.; Fink, Hans-Ferdi; Gould, Clive M.; Koerner, Gotz; Patzke, Hans-Jurgen; and Weitemeyer, Christian, 4,564,665, Cl. 528-21.000.

Brochman, Wilfred R., to Minnesota Mining and Manufacturing Company. Tape closure for a can end. 4,564,121, Cl. 220-359.000.

Brooks, Darrell: *See*—
Maurice, David M.; and Brooks, Darrell, 4,564,016, Cl. 128-645.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Ueno, Hideo, 4,564,301, Cl. 400-63.000.
Ueno, Hideo, 4,564,304, Cl. 400-279.000.

Brouwer, Gerald A.; and DeVries, Charles R., to Lear Siegler, Inc. Tilted spiral article diverter. 4,564,105, Cl. 198-457.000.

Brown, Boveri & Cie AG: *See*—
Weddigen, Gerd; Huber, Robert; Schmidt, Birgit; and Schneider, Hartmut, 4,564,466, Cl. 525-505.000.

Brown, Boveri & Cie Aktiengesellschaft: *See*—
Hasenauer, Dieter; and Hug, Kuno, 4,564,568, Cl. 429-104.000.

Brown, Geoffrey D., to Union Carbide Corporation. Extruder assembly for extruding water-curable silane modified polymers. 4,564,349, Cl. 425-207.000.

Bruel, Michel; and Michaud, Jean-Francois, to Commissariat a l'Energie Atomique. Process and apparatus for varying the deflection of the path of a charged particle beam. 4,564,763, Cl. 250-396.0ML.

Brunn, Hartmut: *See*—
Siebeneiker, Gunter; Brunn, Hartmut; and Steiger, Uwe, 4,563,931, Cl. 84-1.160.

Brunner, Hubert: *See*—
Pertzsch, Albert; Liepold, August; Brunner, Hubert; and Zeroni, Ludwig, 4,564,120, Cl. 220-337.000.

Brunswick Mining and Smelting Corporation Limited: *See*—
Ghatas, Nassef E.; and Peacey, John G., 4,564,387, Cl. 75-0.50A.

Brunswick, Robert; and Hancock, Warren J., to Fisher & Paykel Limited. Speed equalizing means and/or laundry machines incorporating the same. 4,563,786, Cl. 8-159.000.

Brunton Company, The: *See*—
Kramer, Melvin G., 4,564,909, Cl. 364-457.000.

Buchel, Karl H.: *See*—
Streissle, Gert; Plempel, Manfred; Paessens, Arnold; Holmwood, Graham; and Buchel, Karl H., 4,564,622, Cl. 514-383.000.

Bucher, Peter, to Heinrich Bucher, Firma. Container for cooling a cooled commodity. 4,563,881, Cl. 62-457.000.

Buckau-Walther Aktiengesellschaft: *See*—
Bechthold, Horst; Fischer, Heinz J.; and Schulte, Wolfgang, 4,564,510, Cl. 423-235.000.

Buckwald, Robert A.; Cabib, Dario; and Weiser, Kurt, to C.I. Ltd. Method and apparatus for the enhanced detection of a component of a material. 4,564,761, Cl. 250-341.000.

Buckwalter, Brian L.: *See*—
LaHann, Thomas R.; and Buckwalter, Brian L., 4,564,633, Cl. 514-538.000.

Bucsko, Richard B.; and Holland, Paul E., to Carlin Foods Corporation. Acidified vegetables for pastries. 4,564,527, Cl. 426-335.000.

Buffalo Beton Ltd.: *See*—
Driedger, Klaus U., 4,563,844, Cl. 52-192.000.

Buhler, Karl, to BBC Brown, Boveri & Company Limited. Guard arrangement for a bottom electrode of a direct-current arc furnace. 4,564,950, Cl. 373-108.000.

Buhler, Karl, to BBC Brown, Boveri & Company Limited. Cooling arrangement of a bottom electrode for a direct-current arc furnace. 4,564,951, Cl. 373-108.000.

Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., to Standard Oil Company, The. Apparatus for the enhanced separation of impurities from coal. 4,564,369, Cl. 44-2.000.

Burkard, Edward A.; and Segada, James J., to National Gypsum Company. Fire-resistant gypsum board. 4,564,544, Cl. 428-70.000.

Burke, Thomas F.: *See*—
Gilson, Russell A.; and Burke, Thomas F., 4,564,817, Cl. 330-286.000.

Burke, Victor B.; and Burkholder, Charles R., to F.M.P. Enterprise, Inc. Automatic layout machine for tire tread patterns. 4,564,737, Cl. 219-121.0LH.

Burkert, Joachim, to Industriewerk Nachf. Seifert & Co. KG. Apparatus for the lifting of coils, spools and the like. 4,564,231, Cl. 294-96.000.

Burkholder, Charles R.: *See*—
Burke, Victor B.; and Burkholder, Charles R., 4,564,737, Cl. 219-121.0LH.

Burleson, James C. Method and apparatus for disposal of a broad spectrum of waste featuring oxidation of waste. 4,564,458, Cl. 210-747.000.

Burlington Industries, Inc.: *See*—
Gamblin, Rodger L., 4,564,565, Cl. 428-680.000.

Burnhill, Michael S. Vaginal device. 4,564,362, Cl. 604-286.000.

Burrington, George C., to Parker-Hannifin Corporation. Hose coupling. 4,564,223, Cl. 285-256.000.

Burroughs Corporation: *See*—
LaBudde, Edward V.; Niven, Jeffrey E.; Hsieh, Der-Chang; Parker, Roger C.; and Johnson, Robert Jeffery, 4,564,757, Cl. 250-239.000.
Tomlinson, Christopher J.; and Green, Howard H., 4,564,901, Cl. 364-200.000.

Burstell, Helmut: *See*—
Bieringer, Hermann; Burstell, Helmut; Handte, Reinhard; Kocher, Helmut; and Schulze, Ernst-Friedrich, 4,564,381, Cl. 71-88.000.

Burton, George W., to Johnsen & Jorgensen (Plastics) Ltd. Dispensing container. 4,564,124, Cl. 221-263.000.

Burton, Richard A.: *See*—
Alley, Lynn D.; Alley, Stephen W.; Sadlier, William K.; and Burton, Richard A., 4,564,751, Cl. 235-146.000.

Busse-Machukas, Vladimir B.; Lvovich, Florenty I.; Spasskaya, Evdokia K.; Kubasov, Vladimir L.; Mazanko, Anatoly F.; Druzhinin, Ernest A.; Martynov, Alexandr N.; and Nelipa, Ljudmila N. Electrode for electrolysis of solutions of electrolytes. 4,564,434, Cl. 204-290.00F.

Bussemeier, Bernd; Frohning, Carl D.; Horn, Gerhardt; and Kluy, Werner, to Ruhrchemie Aktiengesellschaft. Process for the manufacture of unsaturated hydrocarbons. 4,564,642, Cl. 518-717.000.

Bussmann, Egon, to Siemens Aktiengesellschaft. Preventing lateral oxide growth by first forming nitride layer followed by a composite masking layer. 4,564,394, Cl. 148-1.500.

Buzzanca, Giovanni; Ronchetti, Camillo; Uberti, Franco; and Anzani, Renato, to CISE-Centro Informazioni Studi Esperienze S.p.A. Apparatus for measuring the degree of sensitization of metal articles. 4,564,436, Cl. 204-400.000.

C.I. Ltd.: *See*—
Buckwald, Robert A.; Cabib, Dario; and Weiser, Kurt, 4,564,761, Cl. 250-341.000.

C. Reichert Optische Werke AG: *See*—
Sitte, Hellmuth, 4,563,883, Cl. 62-514.00R.

Cabib, Dario: *See*—
Buckwald, Robert A.; Cabib, Dario; and Weiser, Kurt, 4,564,761, Cl. 250-341.000.

Cadbury Schweppes, PLC: *See—*
Jeans, Edward L., 4,564,483, Cl. 261-64.00B.
Cafferty, Terrance, to Auto Id Inc. Stencil apparatus for use with abrasive particle sprayer for marking items such as automobile parts. 4,563,948, Cl. 101-128.000.
Cain, C. Dean, Jr.; and Dean, Ronnie A., to French, Tommy, a part interest. Process and apparatus for harvesting soft shell crayfish. 4,563,830, Cl. 43-4.500.
Cairo, John A., Jr.; and Jahn, Christopher A., to L'eau Claire Systems, Inc. Upflow gas eductor induced air floatation separator. 4,564,457, Cl. 210-704.000.
Calderon, Arthur: *See—*
Blaske, Paul S.; Zimmerman, Larry D.; Calderon, Arthur; and Longworth, Leroy L., 4,564,585, Cl. 430-313.000.
Caldwell, Albert G.: *See—*
Copp, Frederick C.; Caldwell, Albert G.; and Collard, David, 4,564,684, Cl. 548-362.000.
California Institute of Technology: *See—*
Johnson, William L.; and Schwarz, Ricardo B., 4,564,396, Cl. 148-4.000.
Callaghan, Ian C.; Fink, Hans-Ferdi; Gould, Clive M.; Koerner, Gotz; Patzke, Hans-Jurgen; and Weitemeyer, Christian, to British Petroleum Company p.l.c., The. Oil gas separation. 4,564,665, Cl. 528-21.000.
Calvert, Alan H.: *See—*
Jones, Terence R.; Harrap, Kenneth R.; and Calvert, Alan H., 4,564,616, Cl. 514-260.000.
Calvert, Rodney K., to Mead Corporation, The. Packaging machine. 4,563,853, Cl. 53-48.000.
Cameca: *See—*
Slodzian, Georges; Chaintreau, Marcel; and Dennebouy, Roger, 4,564,758, Cl. 250-309.000.
Campbell, Curtis B., to Chevron Research Company. Quaternary deposit control additives. 4,564,372, Cl. 44-71.000.
Camtech, Inc.: *See—*
Mathias, Richard A., 4,563,906, Cl. 73-862.580.
Canada, Her Majesty the Queen in right of, as represented by the Province of Nova Scotia: *See—*
Drebot, Michael A., 4,563,832, Cl. 43-44.990.
Canada, Robert O.: *See—*
Grossman, Leonard N.; Landry, James D.; Masaitis, William; Canada, Robert O.; and McKenzie, Gerald W., 4,564,498, Cl. 376-245.000.
Cannon, Gary V.: *See—*
Fecik, Michael T.; Cannon, Gary V.; and Beresik, Gayland S., 4,564,380, Cl. 65-163.000.
Canon Kabushiki Kaisha: *See—*
Isohata, Junji, 4,563,820, Cl. 33-180.00R.
Kushida, Naoki; and Kusumoto, Tomoko, 4,564,534, Cl. 427-256.000.
Maeshima, Katsuyoshi, 4,564,864, Cl. 358-280.000.
Nakamura, Shunji; Kan, Fumitaka; Egami, Hidemi; Hosoi, Atsushi; Tajima, Hatsuo; and Nakahata, Kimio, 4,563,978, Cl. 118-658.000.
Nishimoto, Yoshifumi, 4,564,267, Cl. 350-379.000.
Suzuki, Koji; Kuroda, Kouki; and Nagahira, Jyoji, 4,564,287, Cl. 355-14.00D.
Tsutsui, Shinji, 4,564,284, Cl. 355-30.000.
Carbonetti, Italo. Ankle appliance for playing football. 4,564,196, Cl. 273-67.00B.
Carlin Foods Corporation: *See—*
Bucsko, Richard B.; and Holland, Paul E., 4,564,527, Cl. 426-335.000.
Carlson, Richard A.: *See—*
Watson, Francis L.; Angalet, Stevan A.; and Carlson, Richard A., 4,564,529, Cl. 426-570.000.
Carnegie-Mellon University: *See—*
Okada, Tokuji; and Kanade, Takeo, 4,563,954, Cl. 104-138.00G.
Carroll, Raymond; and Ahn, Byong-Ho, to Charles Stark Draper Laboratory, Inc., The. System for electronically tuning and suppressing 2N rectification torques in a dynamically tuned free rotor gyroscope. 4,563,909, Cl. 74-5.500.
Carscallen, Richard C.: *See—*
Janousek, Bruce K.; and Carscallen, Richard C., 4,564,425, Cl. 204-34.500.
Carver, George P. Retractable boat keel. 4,563,971, Cl. 114-132.000.
Case, Anthony R. Cross-country ski. 4,564,210, Cl. 280-604.000.
Casio Computer Co., Ltd.: *See—*
Kumagai, Akira, 4,564,904, Cl. 364-405.000.
Nakano, Harumi, 4,564,923, Cl. 364-900.000.
Sunada, Takuya, 4,563,932, Cl. 84-1.220.
Cassat, Robert; and Alliot-Lugaz, Maurice, to Rhone-Poulenc Recherches. Metallization of electrically insulating polymeric film substrates. 4,564,424, Cl. 204-20.000.
Cassella Aktiengesellschaft: *See—*
Kussmaul, Ulrich; Becherer, Johannes; Handte, Reinhard; and Muller, Rolf, 4,564,682, Cl. 548-169.000.
Caterpillar Tractor Co.: *See—*
Shookman, Dennis R.; and Hendrickson, Vergil P., 4,564,205, Cl. 280-166.000.
Cawse, John L.: *See—*
Still, Richard H.; Cawse, John L.; and Stanford, John L., 4,564,718, Cl. 585-350.000.
Cawthorne, Roland: *See—*
Clitheros, Derek P.; Livingstone, David A.; Roberts, David B.; and Cawthorne, Roland, 4,564,410, Cl. 156-356.000.
Central Glass Company, Limited: *See—*
Katsuhara, Yutaka; Nakamichi, Toshihiro; Kawai, Toshikazu; and Nakazora, Toru, 4,564,716, Cl. 568-842.000.
Centre Electronique Horloger S.A.: *See—*
Vuilleumier, Raymond; and Weiss, Paul-Charles, 4,564,836, Cl. 340-783.000.
Centre National de la Recherche: *See—*
Macchi, Odile, 4,564,934, Cl. 370-32.000.
Centre National de la Recherche Scientifique: *See—*
Simoneau, Raynald; and Chincholle, Lucien, 4,564,422, Cl. 204-1.00T.
Centre National de la Recherche Scientifique (CNRS): *See—*
Durand, Georges E. A.; Martinot-Lagarde, Philippe; and Dozov, Ivan, 4,564,266, Cl. 350-340.000.
Chaintreau, Marcel: *See—*
Slodzian, Georges; Chaintreau, Marcel; and Dennebouy, Roger, 4,564,758, Cl. 250-309.000.
Chameroy, Pascal; and Decraemer, Alain, to U.S. Philips Corporation. Method and device for adjusting the black level of a video signal. 4,564,863, Cl. 358-172.000.
Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Catalysts over AlF_3 activated high silica zeolites. 4,564,719, Cl. 585-640.000.
Chang, Man-Chium; Mao, Chung-Ling; and Vargas, Richard R., to Avery International Corporation. Emulsion-acrylic pressure-sensitive adhesives formed in two step polymerization. 4,564,664, Cl. 524-826.000.
Chapman, David M.: *See—*
Orlandino, Michael J.; and Chapman, David M., 4,564,212, Cl. 280-642.000.
Charles Stark Draper Laboratory, Inc., The: *See—*
Carroll, Raymond; and Ahn, Byong-Ho, 4,563,909, Cl. 74-5.500.
Charlton Associates: *See—*
Baun, Kenneth W., 4,563,824, Cl. 33-568.000.
Charych, Arthur, to TII Industries, Inc. Uninterruptible switching power supply system. 4,564,767, Cl. 307-66.000.
Chau, Albert W.: *See—*
Geithman, Glenn A.; and Chau, Albert W., 4,564,810, Cl. 324-230.000.
Chauvigne, Michel, to Societe Industrielle de Bellevaux Sibel. Programmer control device. 4,563,911, Cl. 74-125.000.
Chazov, Evgeny I.: *See—*
Maximenko, Alexandr V.; Tischenko, Elena G.; Torchilin, Vladimir P.; Smirnov, Vladimir N.; and Chazov, Evgeny I., 4,564,596, Cl. 435-177.000.
Chekouras, Carl J. Spring-loaded tillage implement. 4,564,075, Cl. 172-572.000.
Cherepok, Gennady V.: *See—*
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.
Chevalier, Jean-Pierre J.: *See—*
Brisse, Jacques D.; and Chevalier, Jean-Pierre J., 4,564,840, Cl. 343-6.5LC.
Chevron Research Company: *See—*
Campbell, Curtis B., 4,564,372, Cl. 44-71.000.
Kuehler, Christopher W.; and Dahlberg, Arthur J., 4,564,439, Cl. 208-59.000.
Offermann, Paul F., 4,564,747, Cl. 219-482.000.
Chicago Bridge & Iron Company: *See—*
Allo, Vincent F.; and Stafford, Donald C., 4,564,064, Cl. 165-118.000.
Childers Corporation: *See—*
Childers, Roger K.; and Trumbo, Andrew L., 4,564,037, Cl. 133-3.00A.
Childers, Roger K.; and Trumbo, Andrew L., to Childers Corporation. Coin-queueing head for high-speed coin-sorting and counting apparatus. 4,564,037, Cl. 133-3.00A.
Chin, Albert K.: *See—*
Fogarty, Thomas J.; and Chin, Albert K., 4,564,014, Cl. 128-344.000.
Chincholle, Lucien: *See—*
Simoneau, Raynald; and Chincholle, Lucien, 4,564,422, Cl. 204-1.00T.
Ching, Tien-Fu; and Chou, Lung-Chiao. Ellipsograph capable of drawing dotted line. 4,563,819, Cl. 33-30.400.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See—*
Ecsery, Zoltan; Somfai, Eva; Hermann nee Voros, Judit; Nagy, Lajos; Szabo, Gabor; Orban, Otto; and Arvai, Laszlo, 4,564,706, Cl. 564-376.000.
Chisso Corporation: *See—*
Ohgushi, Masuhito; Ohtsuka, Hiroshi; Asaba, Tsutomu; Hoshi, Hironobu; Goshokubo, Kenichi; Wakui, Takeo; Ishii, Kiminori; Ohno, Masashi; and Okada, Yukio, 4,564,557, Cl. 428-333.000.
Chiyoda Tsusho K.K.: *See—*
Ishii, Hidesaburo, 4,564,221, Cl. 285-239.000.
Cholet, Jacques: *See—*
Layotte, Pierre-Claude; Cholet, Jacques; Grolet, Pierre; and Huin, Roland, 4,564,083, Cl. 181-114.000.
Chou, Lung-Chiao: *See—*
Ching, Tien-Fu; and Chou, Lung-Chiao, 4,563,819, Cl. 33-30.400.

Christ, Allen E.; and Roche, Thomas A., to Motorola, Inc. Apparatus and method for protecting integrated circuits. 4,564,880, Cl. 361-212.000.

Christian Rovsing A/S: *See—*
Smitt, Asbjorn, 4,564,900, Cl. 364-200.000.

Christl, Wilfried: *See—*
Weining, Hans-Karl; Kienle, Juergen; and Christl, Wilfried, 4,563,998, Cl. 123-568.000.

Church, Kenneth: *See—*
Davies, Lawrence W.; Martin, Jeff; Sumerak, Joseph E.; and Church, Kenneth, 4,564,540, Cl. 428-34.000.

Ciba-Geigy Corporation: *See—*
Finter, Jurgen; and Fischer, Walter, 4,564,578, Cl. 430-270.000.
Kunz, Walter; Eckhardt, Wolfgang; and Hubele, Adolf, 4,564,629, Cl. 514-472.000.
Spencer, Alwyn, 4,564,479, Cl. 260-465.00H.

Cipelletti, Alberto, to Firm Alberto Cipelletti. Ice-cream machine for family use. 4,563,880, Cl. 62-234.000.

CISE-Centro Informazioni Studi Esperienze S.p.A.: *See—*
Buzzanca, Giovanni; Ronchetti, Camillo; Uberti, Franco; and Anzani, Renato, 4,564,436, Cl. 204-400.000.

CLAAS OHG: *See—*
Ackermann, Gustav; Clostermeyer, Gerhard; and Muller, Werner, 4,563,854, Cl. 53-118.000.
Clostermeyer, Gerhard, 4,563,868, Cl. 56-341.000.
Dammann, Johannes, 4,564,025, Cl. 130-27.00R.

Clark, Barry A., to Commonwealth of Australia, The. Visibility gauge. 4,564,274, Cl. 351-233.000.

Clark, Paul M., to Whirlpool Corporation. Hose attachment structure for upright vacuum cleaner. 4,563,790, Cl. 15-337.000.

Clarke, Frederick G. E., Jr.; King, Anthony R.; and Majewski, Anthony, to R. R. Donnelley & Sons Company. Apparatus for gathering printed signatures for saddle stitching. 4,564,186, Cl. 270-54.000.

Clausen, Kermit: *See—*
Glover, Neal; Clausen, Kermit; Mayne, Chris; and Glissmann, Randy, 4,564,945, Cl. 371-38.000.

Clauson, Melvil B.: *See—*
Touhsaent, Robert E.; Wagner, John R., Jr.; and Clauson, Melvil B., 4,564,558, Cl. 428-349.000.
Wagner, John R., Jr.; and Clauson, Melvil B., 4,564,559, Cl. 428-349.000.

Cleary, Michael M.; and Bohorquez, Luis A., to Hughes Helicopters, Inc. Weapon with next round select feed system. 4,563,936, Cl. 89-11.000.

Cleer, Clarence W., Jr. Hydronic system with circulators connected to a header. 4,564,142, Cl. 237-8.00R.

Clelford, Douglas H.; Skonieczny, Joseph P.; and Murphy, Richard D., to United Technologies Corporation. Automatic limiting of helicopter engine torque. 4,564,908, Cl. 364-433.000.

Clements Industries, Inc.: *See—*
Kusters, Willy, 4,563,856, Cl. 53-138.00A.

Clerici, Mario: *See—*
Neri, Carlo; Giroldini, William; Rinaldi, Antonio; Traversoni, Mario; and Clerici, Mario, 4,564,691, Cl. 549-462.000.

Clitheros, Derek P.; Livingstone, David A.; Roberts, David B.; and Cawthorne, Roland, to General Motors Corporation. Adhesive application apparatus. 4,564,410, Cl. 156-356.000.

Clostermeyer, Gerhard, to Claas Ohg. Large baling press for agricultural products. 4,563,868, Cl. 56-341.000.

Clostermeyer, Gerhard: *See—*
Ackermann, Gustav; Clostermeyer, Gerhard; and Muller, Werner, 4,563,854, Cl. 53-118.000.

Coburn Optical Industries, Inc.: *See—*
Tusinski, Joseph, 4,563,916, Cl. 74-829.000.

Cochet, Andre ; Droussent, Roger; and Jurado, Marcel, to Commissariat a l'Energie. Process for storing flexible contaminated materials. 4,564,469, Cl. 252-626.000.

Cocke, John: *See—*
Arnold, Richard F.; Cocke, John; Coppersmith, Don; Seigler, Adrian E.; and Strait, Gary E., 4,564,944, Cl. 371-37.000.

Cohen, Edwin. Ghost signal elimination circuit. 4,564,862, Cl. 358-167.000.

Cohen, Joseph D., to Performance Pool Products, Ltd. Apparatus for cleaning a swimming pool strainer. 4,564,451, Cl. 210-411.000.

Coissard, Pierre; Richard, Joseph; and Morin, Francois. Method for the manufacture of a display screen based on thin-film transistors and capacitors. 4,563,806, Cl. 29-571.000.

Coker, Geoffrey G.: *See—*
Findlay, John W. A.; and Coker, Geoffrey G., 4,564,685, Cl. 548-578.000.

Cole, Harold E., to Goldberg, James R. Molded safety closure device. 4,564,114, Cl. 215-256.000.

Coleman, James P.; and McMackins, Dudley E., to Monsanto Company. Product separation from electrolyte salts maintained in molten state. 4,564,689, Cl. 549-326.000.

Collard, David: *See—*
Copp, Frederick C.; Caldwell, Albert G.; and Collard, David, 4,564,684, Cl. 548-362.000.

College, Neil F.: *See—*
Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., 4,563,810, Cl. 29-749.000.

Collins, George G. Test device for fuses and batteries. 4,564,802, Cl. 324-51.000.

Collins, John C.; and DeFazio, John J., to International Business Machines. System path stressing. 4,564,943, Cl. 371-28.000.

Collomb-Ceccarini, Joelle; and Crouzet, Pierre, to BP Chemicals Limited. Catalyst and process for polymerizing olefins. 4,564,605, Cl. 502-110.000.

Comberg, Albert, to U.S. Philips Corporation. Optical printer. 4,564,866, Cl. 358-302.000.

Cominco Ltd.: *See—*
Fairweather, Michael J.; Rockandel, Michael A.; Sadan, Abraham; and Swinkels, Godefridus M., 4,564,508, Cl. 423-189.000.

Commissariat a l'Energie: *See—*
Cochet, Andre ; Droussent, Roger; and Jurado, Marcel, 4,564,469, Cl. 252-626.000.

Commissariat a l'Energie Atomique: *See—*
Bruel, Michel; and Michaud, Jean-Francois, 4,564,763, Cl. 250-396.0ML.
Fillot, Alain; Gallet, Jean; Paltrier, Sylvain; and Schaub, Bernard, 4,564,415, Cl. 156-604.000.

Commonwealth of Australia, The: *See—*
Clark, Barry A., 4,564,274, Cl. 351-233.000.
Iwanicki, Walter; and Duane, Brian, 4,564,003, Cl. 126-427.000.

Compagnie Francaise de Raffinage: *See—*
Loutaty, Roben; and Haquet, Yvon, 4,564,328, Cl. 414-301.000.

Comus International, Inc.: *See—*
Romano, Robert P., 4,564,728, Cl. 179-175.30R.

Coneglio, August F. Writing board. 4,564,091, Cl. 190-11.000.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Doring, Heinrich, 4,564,056, Cl. 152-427.000.

Continental White Cap, Inc.: *See—*
Mendler, Leo R., 4,564,113, Cl. 215-252.000.

Cookson, Richard C.: *See—*
Scopes, David I. C.; Newton, Roger F.; and Cookson, Richard C., 4,564,618, Cl. 514-274.000.

Coombs, Richard R. H.; and El-Saba, Mekki M., to National Research Development Corp. Orthopaedic external fixation devices. 4,564,007, Cl. 128-92.00A.

Cooper, Charles E. Antenna with P.I.N. diode switched tuning inductors. 4,564,843, Cl. 343-745.000.

Cooper, Glenn D., deceased (by Cooper, Rose H., executrix); and Kinson, Philip L., to General Electric Company. Preparation of graft copolymers of polyphenylene ether and rubber, optionally including poly(alkenyl aromatic). 4,564,656, Cl. 525-152.000.

Cooper Industries: *See—*
Smerz, Frank G., 4,564,257, Cl. 339-145.00R.

Cooper Industries, Inc.: *See—*
Warner, Dean C.; and Marek, James R., 4,564,830, Cl. 337-246.000.

Cooper, Rose H., executrix: *See—*
Cooper, Glenn D., deceased; and Kinson, Philip L., 4,564,656, Cl. 525-152.000.

Coplot, Daniel; and Picon, Georges, to Atochem (Societe Anonyme Styled). Method and apparatus for the detection of toxic substances in waste water feeding a biological treatment plant. 4,564,453, Cl. 210-614.000.

Copp, Frederick C.; Caldwell, Albert G.; and Collard, David. 3-Amino-1-phenyl-2-pyrazolines. 4,564,684, Cl. 548-362.000.

Coppersmith, Don: *See—*
Arnold, Richard F.; Cocke, John; Coppersmith, Don; Seigler, Adrian E.; and Strait, Gary E., 4,564,944, Cl. 371-37.000.

Corbett, Peter R. Multi-purpose garden tool. 4,564,072, Cl. 172-13.000.

Cordis Corporation: *See—*
Hess, Stanley R., 4,564,023, Cl. 128-785.000.

Cornelison, James J.: *See—*
Johnson, Edgar G., Jr.; Cornelison, James J.; and Mackovjak, Paul V., 4,563,907, Cl. 73-864.160.

Cornell, David D.: *See—*
Lentz, Carl M.; Overton, James R.; and Cornell, David D., 4,564,701, Cl. 562-406.000.

Cornwell, Tomy W.: *See—*
Niswander, Robert L.; and Cornwell, Tomy W., 4,564,313, Cl. 405-125.000.

Costa, Jorge; and Reichel, Wolfgang, to Hermes Precisa International S.A. Sheet feed device for a printer or typewriter. 4,564,187, Cl. 271-9.000.

Coughlan, Raymond T.; and Anderson, Terrence J., to Daubert Coated Products Inc. Pressure sensitive adhesive film for medical use. 4,564,010, Cl. 128-156.000.

Coulter Corporation: *See—*
Loren, Mark; and Pedroso, Raul I., 4,564,803, Cl. 324-71.100.

Courcy, Stephen E.: *See—*
Sherman, Jeffrey D.; and Courcy, Stephen E., 4,564,770, Cl. 307-311.000.

CPC International Inc.: *See—*
Feldmann, John; Koebernick, Hubert; Richter, Klaus; and Woelk, Hans-Ulrich, 4,564,692, Cl. 549-464.000.

Craft, Charles E.; Winter, Lester; and Pote, Robert Hawley, to Delta Data Systems Corporation. Rotary tilt base for video terminal. 4,564,166, Cl. 248-349.000.

Craig, James E.: *See—*
Bacon, Jeffery E.; Craig, James E.; and Pedersen, Mark K., 4,564,430, Cl. 204-206.000.

Cranston, Benjamin H., to AT&T Technologies, Inc. Method of making a dual-in-line package. 4,563,811, Cl. 29-827.000.

Crawford, Thomas C.; Keely, Stanley L.; Larson, David L.; Lombardino, Joseph G.; and Maciejko, James J., to Pfizer Inc. Antiinflammatory methods. 4,564,614, Cl. 514-222.000.

Craze, David A.: *See—*
Russ, Calvin W.; and Craze, David A., 4,564,207, Cl. 280-402.000.

Cripps, Milo: *See—*
Roberts, William E.; and Cripps, Milo, 4,564,326, Cl. 414-131.000.
Crocker National Bank: *See—*
Kolb, Richard L., 4,564,927, Cl. 367-42.000.
Crouzet, Pierre: *See—*
Collomb-Ceccarini, Joelle; and Crouzet, Pierre, 4,564,605, Cl. 502-110.000.
Crown Obrist AG: *See—*
Breuer, Hans-Werner, 4,564,112, Cl. 215-246.000.
Crucible Materials Corporation: *See—*
Narasimhan, Kalatur S. V. L.; and Preusch, Charles D., 4,564,400, Cl. 148-103.000.
Strichman, George A.; Dulis, Edward J.; Narasimhan, Kalatur S. V. L.; and Lizzi, Thomas, 4,564,401, Cl. 148-104.000.
Crumbach, Richard; Schilde, Heinz-Josef; and Tiedemann, Helmut, to Saint-Gobain Vitrage. Process and device for covering a lens preform with a protective sheet. 4,564,408, Cl. 156-212.000.
Curcuri, Thomas J.: *See—*
Kozlowski, Chester P.; and Curcuri, Thomas J., 4,563,975, Cl. 118-320.000.
Curtis, John R.; and Renwick, John D., to Sericol Group Limited. Process of preparing screen stencil using diazo photosensitive compositions with acidic p-H indicator. 4,564,581, Cl. 430-308.000.
Cutler, Cassius C.: *See—*
Newton, Steven A.; Shaw, Herbert J.; and Cutler, Cassius C., 4,564,293, Cl. 356-350.000.
Cutler, Orvid R., Jr.: *See—*
Fieder, Donald W.; Stanton, Joseph J.; Fisher, Christopher E.; and Cutler, Orvid R., Jr., 4,564,666, Cl. 522-33.000.
Cybulski, Claude E., to Minnesota Mining and Manufacturing Company. Videocassette wear button. 4,564,156, Cl. 242-197.000.
Cybulski, Claude E., to Minnesota Mining and Manufacturing Company. Automatic record-lockout mechanism. 4,564,871, Cl. 360-60.000.
Czwalinna, Hans: *See—*
Becher, Dieter; Konig, Christian; Tiemann, Eckhard; Czwalinna, Hans; and Hagen, Wilhelm, 4,564,513, Cl. 423-415.00A.
Dahlberg, Arthur J.: *See—*
Kuehler, Christopher W.; and Dahlberg, Arthur J., 4,564,439, Cl. 208-59.000.
Dahm, Horst: *See—*
Bauer, Wilhelm; Berger, Josef; Dahm, Horst; Klemm, Hans; Schmid, Peter; Seidl, Horst; and Walter, Dietmar, 4,564,883, Cl. 361-334.000.
Daikin Industries, Ltd.: *See—*
Shimizu, Tetsuo; and Akamatsu, Masafumi, 4,564,652, Cl. 524-805.000.
Daikin Kogyo Co., Ltd.: *See—*
Ohmori, Akira; Tomihashi, Nobuyuki; Inukai, Hiroshi; and Shimizu, Yoshiki, 4,564,717, Cl. 568-843.000.
Daiku, Yoshiharu: *See—*
Sugimoto, Hachiro; Nakamura, Takaharu; Hamazo, Sachiyuki; and Daiku, Yoshiharu, 4,564,617, Cl. 514-265.000.
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Andres, Rudolf, 4,564,060, Cl. 165-98.000.
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Grimm, Hermann; Konig, Volkmar; and Karioth, Gernot, 4,563,942, Cl. 98-2.160.
Stephan, Wolfgang; and Rieker, Heinz, 4,564,906, Cl. 364-424.100.
Weining, Hans-Karl; Kienle, Juergen; and Christl, Wilfried, 4,563,998, Cl. 123-568.000.
Dainippon Screen Mfg. Co., Ltd.: *See—*
Yamada, Mitsuhiko, 4,564,865, Cl. 358-287.000.
Daisenberger, Georg, to Siemens Aktiengesellschaft. Telecommunications system, particularly a telephone exchange system, having overload protected sequential logic systems. 4,564,725, Cl. 179-8.00A.
Damiano, Ralph R.; Rogers, Wilfred R.; and Whitney, Charles A., to Wiremold Company, The. Flat cable transition connector. 4,564,256, Cl. 339-99.00R.
Dammann, Johannes, to Claas OHG. Self-propelled harvester thresher. 4,564,025, Cl. 130-27.00R.
Dammann, Peter, to Barmag Barmer Maschinenfabrik AG. Air jet nozzle for treatment of yarns. 4,563,799, Cl. 28-272.000.
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Birch, Leon; and Hartmann, Jorgen, 4,564,955, Cl. 381-69.000.
Danfoss A/S: *See—*
Melamed, Anna, 4,564,769, Cl. 307-300.000.
Soendergaard, Joergen, 4,563,941, Cl. 92-134.000.
Daniel, Jacob, to Metalworking Lasers International Ltd. High-power lasers. 4,564,947, Cl. 372-58.000.
Danilkin, Viktor A.: *See—*
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Danley, Thomas J.; and Rey, Charles A., to Intersonics Incorporated. Subwoofer speaker system. 4,564,727, Cl. 179-116.000.
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Kalmanczhelyi, Gabor, 4,564,038, Cl. 137-101.000.
Kalmanczhelyi, Gabor, 4,564,039, Cl. 137-101.000.
D'Aoust, Brian G. Total dissolved gas pressure measuring device. 4,563,892, Cl. 73-19.000.
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Daubert Coated Products Inc.: *See—*
Coughlan, Raymond T.; and Anderson, Terrence J., 4,564,010, Cl. 128-156.000.
Daumuller, Hans; and Ruckwied, Heinz, to Robert Bosch GmbH. Vehicle headlight. 4,564,891, Cl. 362-294.000.
Davies, Lawrence W.; Martin, Jeff; Sumerak, Joseph E.; and Church, Kenneth. Pultruded fibreglass spacer for sealed window units. 4,564,540, Cl. 428-34.000.
Davies, Margaret A.: *See—*
Boltze, Karl-Heinz; Davies, Margaret A.; Junge, Bodo; Schuurman, Teunis; and Traber, Jorg, 4,564,613, Cl. 514-222.000.
Dawson, Fred. Exercise apparatus. 4,564,194, Cl. 272-123.000.
Decraemer, Alain: *See—*
Chameroy, Pascal; and Decraemer, Alain, 4,564,863, Cl. 358-172.000.
Deere & Company: *See—*
Boardman, Peter W., 4,563,926, Cl. 83-107.000.
Deering, Roland F., to Union Oil Company of California. Process for retorting oil shale with fluidized retorting of shale fines. 4,564,437, Cl. 208-11.00R.
DeFazio, John J.: *See—*
Collins, John C.; and DeFazio, John J., 4,564,943, Cl. 371-28.000.
De Fusco, Albert A.: *See—*
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De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., to American Standard Inc. Self-contained sewage waste disposal system. 4,564,446, Cl. 210-167.000.
Degussa Aktiengesellschaft: *See—*
Baacke, Michael; and Kleinschmit, Peter, 4,564,512, Cl. 423-328.000.
Drauz, Karlheinz; Kleemann, Axel; and Wirthwein, Rolf, 4,564,514, Cl. 423-589.000.
Dehydro Corporation: *See—*
Piper, Louis H.; White, J. David; and Hartman, Ronald H., 4,564,450, Cl. 210-293.000.
Del Rosso, Victor, to Hi-Speed Checkweigher Co., Inc. Powered conveying and weighing machine. 4,564,077, Cl. 177-145.000.
Delta Data Systems Corporation: *See—*
Craft, Charles E.; Winter, Lester; and Pote, Robert Hawley, 4,564,166, Cl. 248-349.000.
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, to Wisconsin Alumni Research Foundation. 23,23-Difluoro-25-hydroxy-vitamin D_3 and process for preparing same. 4,564,474, Cl. 260-397.200.
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Slodzian, Georges; Chaintreau, Marcel; and Dennebouy, Roger, 4,564,758, Cl. 250-309.000.
Dentalwerk Buroos Gesellschaft m.b.H.: *See—*
Rosenstatter, Otto, 4,564,354, Cl. 433-133.000.
Dentonaut Lab, Ltd.: *See—*
Traiger, Harry A.; and Traiger, Mark A., 4,564,355, Cl. 433-215.000.
Depiereux, Wolf-Rudiger. Method of electrochemically roughening aluminium surfaces in the manufacture of offset printing plates. 4,564,429, Cl. 204-129.750.
Deschenes, Maurice, to Geant Entrepeneur Electrique Ltee. Pre-cast heating panel. 4,564,745, Cl. 219-213.000.
Desmond, Michael J.; and Pesa, Frederick A., to Standard Oil Company (Ohio), The. Synthesis of molecular sieving metallosilicates using heteropolymetallates. 4,564,511, Cl. 423-277.000.
DeSoto, Inc.: *See—*
Fieder, Donald W.; Stanton, Joseph J.; Fisher, Christopher E.; and Cutler, Orvid R., Jr., 4,564,666, Cl. 522-33.000.
Deutsche Babcock Aktiengesellschaft: *See—*
Schulze, Gerd, 4,564,300, Cl. 384-581.000.
DeVries, Charles R.: *See—*
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De Winter, Walter F.: *See—*
Uytterhoeven, Herman J.; De Winter, Walter F.; and Marien, August M., 4,564,574, Cl. 430-115.000.
Dexide, Inc.: *See—*
Garabedian, Michael E.; and Morgan, Glenn E., Sr., 4,564,127, Cl. 222-96.000.
Dhawan, Satish K. Field-coupled pointing device. 4,564,835, Cl. 340-710.000.
Diamond Crystal Salt Company: *See—*
Heiss, John F.; and Leverenz, Melvin E., 4,564,367, Cl. 23-295.00S.
Dicke, Hans-Rudolf; Schmidt, Manfred; El-Sayed, Aziz; Biskup, Ulrich; Bottenbruch, Ludwig; and Freitag, Dieter, to Bayer Aktiengesellschaft. Thermotropic aromatic polyesters having a high tenacity and an improved melt viscosity, and mouldings, filaments, fibres and films thereof. 4,564,669, Cl. 528-173.000.
Dickore, Karlfried; Engels, Hans D.; Kratzer, Hans; and Merz, Walter, to Bayer Aktiengesellschaft. Production of 3,3-dimethyl-2-oxobutyric acid salt. 4,564,704, Cl. 562-577.000.
Dickson, Joseph F., to Litton Industrial Products, Inc. Cut-off style, roll thread flat dies. 4,563,890, Cl. 72-469.000.

Didier-Werke AG: *See*—
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, 4,564,485, Cl. 264-30.000.

Dienes, Geza: *See*—
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Diesel Kiki Co., Ltd.: *See*—
Aoki, Hachiro, 4,563,997, Cl. 123-559.000.

Dieter Graesslin Feinwerktechnik: *See*—
Kammerer, Gerd; and Thoma, Friedrich X., 4,564,827, Cl. 335-92.000.

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Dimoff, John. Valve removing tool. 4,563,803, Cl. 29-213.00R.

Dinger, Ronald W.: *See*—
Ilienberg, Cornelius J.; Dinger, Ronald W.; Kunde, David A.; and Lucarelli, Anthony V., 4,564,829, Cl. 335-135.000.

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Arakawa, Tatsumi; Ozaki, Masaru; and Ikeda, Yukihiro, 4,564,668, Cl. 528-388.000.

Dirks, Arthur: *See*—
Schommler, Manfred; and Dirks, Arthur, 4,563,930, Cl. 83-862.000.

Dirmeyer, Josef; Odemar, Norbert; and Winzer, Gerhard, to Siemens Aktiengesellschaft. Optical waveguide branching unit and method of making same. 4,564,260, Cl. 350-96.160.

Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and by Silaeva, Anna A., administrator. Method for continuous casting of light-alloy ingots. 4,564,059, Cl. 164-478.000.

Dobson, Gary A.: *See*—
Bell, David D.; and Dobson, Gary A., 4,564,290, Cl. 356-73.000.

Dr. C. Otto & Comp. GmbH: *See*—
Koddenberg, Theo; and Hegemann, Franz-Josef, 4,564,421, Cl. 202-254.000.
Spindeler, Heinrich; Wackerbarth, Folkard; Kuhlmann, Horst; Dohle, Helmut; and Althaus, Horst, 4,564,420, Cl. 202-139.000.
Spindeler, Heinz; Wackerbarth, Folkard; and Halbherr, Gerd, 4,564,419, Cl. 202-123.000.

Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See*—
Dorsch, Heinz; and Beer, Michael, 4,563,985, Cl. 123-90.310.
Ziegler, Gerhard; Gregotsch, Karl; and von Sivers, Rolf, 4,563,984, Cl. 123-52.00M.

Dr. Ing. Rudolf Hell GmbH: *See*—
Knop, Hans-Georg; Nowak, Michael; Redecker, Friedrich; and Tiede, Ralf, 4,564,859, Cl. 358-75.000.

Dr. Johannes Heidenhain GmbH: *See*—
Ernst, Alfons, 4,564,294, Cl. 356-374.000.
Schwefel, Ernst, 4,564,912, Cl. 364-474.000.

Doherty, Alfred E., Jr., to Explosive Research Ltd. System and method for increasing wall thickness on end of pipe on which thread is to be fabricated. 4,564,226, Cl. 285-334.000.

Doherty, Charles F.; and Johnson, Robert E., to Pyrotector, Inc. Smoke detector. 4,564,762, Cl. 250-381.000.

Dohle, Helmut: *See*—
Spindeler, Heinrich; Wackerbarth, Folkard; Kuhlmann, Horst; Dohle, Helmut; and Althaus, Horst, 4,564,420, Cl. 202-139.000.

Doleer Electronics, Inc.: *See*—
Montgomery, Douglas J.; Goldstein, Leonard H.; and Stumbo, Ernest, 4,564,141, Cl. 236-20.00R.

Dominion Tool & Die Co.: *See*—
Kozlowski, Chester P.; and Curcuri, Thomas J., 4,563,975, Cl. 118-320.000.

Domnick Hunter Filters Limited: *See*—
Billiet, Colin T., 4,564,376, Cl. 55-486.000.

Donahoo, Lloyd E. Arm support apparatus. 4,564,008, Cl. 128-94.000.

Dorer, Casper J., Jr.; and Hayashi, Katsumi. Hydrocarbyl-substituted carboxylic acylating agent derivative containing combinations, and fuels containing same. 4,564,460, Cl. 252-73.000.

Doring, Heinrich, to Continental Gummi-Werke Aktiengesellschaft. Valve for wheels for tubeless bicycle tires. 4,564,056, Cl. 152-427.000.

Dornier Gesellschaft mit beschrankter Haftung: *See*—
Zimmer, Herbert; Dathe, Ingo; Hoffmann, Reinhard; Hora, Petr; and Wortmann, Franz X., 4,564,337, Cl. 416-223.00R.

Dorsch, Heinz; and Beer, Michael, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Cam shaft drive of an internal combustion engine. 4,563,985, Cl. 123-90.310.

Doseq Dutch Oil Spill Eq v.o.f.: *See*—
Kampers, Gerrit, 4,564,449, Cl. 210-242.300.

Doteuchi, Masami: *See*—
Hirai, Kentario; Ishiba, Teruyuki; Matsutani, Shigeru; Makino, Itsuo; Fujishita, Toshio; Doteuchi, Masami; and Otani, Koichi, 4,564,623, Cl. 514-408.000.

Douglas, George H.: *See*—
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Dow Chemical Company, The: *See*—
Harris, William I., 4,564,644, Cl. 521-28.000.
Tollar, James E., 4,564,063, Cl. 165-109.100.

Dow Corning Corporation: *See*—
Homan, Gary R., 4,564,456, Cl. 210-698.000.

Dowzall, Martin E.: *See*—
Houssian, Vazgen; and Dowzall, Martin E., 4,564,414, Cl. 156-541.000.

Dozov, Ivan: *See*—
Durand, Georges E. A.; Martinot-Lagarde, Philippe; and Dozov, Ivan, 4,564,266, Cl. 350-340.000.

Draf Industries, Inc.: *See*—
Alesi, Thomas W., 4,563,804, Cl. 29-229.000.

Dragerwerk AG: *See*—
Siegmann, Klaus; and Schmidt, Martin, 4,564,021, Cl. 128-716.000.

Drauz, Karlheinz; Kleemann, Axel; and Wirthwein, Rolf, to Degussa Aktiengesellschaft. Process for the production of water-free organic hydrogen peroxide solution. 4,564,514, Cl. 423-589.000.

Drebot, Michael A., to Canada, Her Majesty the Queen in right of, as represented by the Province of Nova Scotia. Bait container. 4,563,832, Cl. 43-44.990.

Drew, John A., to John Drew (London) Limited. Production of insoles. 4,563,787, Cl. 12-142.00N.

DRI STEEM Humidifier Company: *See*—
Morton, Bernard W.; and Olseth, Bruce K., 4,564,746, Cl. 219-276.000.

Driedger, Klaus U., to Buffalo Beton Ltd. Grain elevator. 4,563,844, Cl. 52-192.000.

Droussent, Roger: *See*—
Cochet, Andre ; Droussent, Roger; and Jurado, Marcel, 4,564,469, Cl. 252-626.000.

Druzhinin, Ernest A.: *See*—
Busse-Machukas, Vladimir B.; Lvovich, Florenty I.; Spasskaya, Evdokia K.; Kubasov, Vladimir L.; Mazanko, Anatoly F.; Druzhinin, Ernest A.; Martynov, Alexandr N.; and Nelipa, Ljudmila N., 4,564,434, Cl. 204-290.00F.

Duane, Brian: *See*—
Iwanicki, Walter; and Duane, Brian, 4,564,003, Cl. 126-427.000.

Dufrenne, Gerald, to Unitek Corporation. Direct current pulse welder. 4,564,735, Cl. 219-110.000.

Dugan, William P., to General Dynamics Pomona Division. Permanent mandrel for making bumped tapes and methods of forming. 4,564,423, Cl. 204-12.000.

Dulis, Edward J.: *See*—
Strichman, George A.; Dulis, Edward J.; Narasimhan, Kalatur S. V. L.; and Lizzi, Thomas, 4,564,401, Cl. 148-104.000.

Dunlop Aktiengesellschaft: *See*—
Heitzenroder, Hans F.; Wachter, Ernst; and Bitsch, Kurt, 4,564,107, Cl. 206-315.900.

Duplo Manufacturing Corporation: *See*—
Matsushita, Ken; Ikeda, Hiroki; and Sugiyama, Yoshihide, 4,563,947, Cl. 101-122.000.

Duplo Seiki Corporation: *See*—
Matsushita, Ken; Ikeda, Hiroki; and Sugiyama, Yoshihide, 4,563,947, Cl. 101-122.000.

Du Pont de Nemours, E. I., and Company: *See*—
Beresniewicz, Aleksander, 4,564,661, Cl. 526-212.000.
Frazer, August H.; and Harris, John F., Jr., 4,564,705, Cl. 564-337.000.
Goldberg, Israel; and Stieglitz, Barry, 4,564,594, Cl. 435-139.000.
Huybrechts, Jozef T.; and Vleminckx, Victor R., 4,564,648, Cl. 523-423.000.
Levitt, George, 4,564,384, Cl. 71-92.000.
Lore, Albert L.; and Raynolds, Stuart, 4,564,561, Cl. 428-422.000.
van Alst, Wilhelmus B. T., 4,564,254, Cl. 339-99.00R.

Durand, Georges E. A.; Martinot-Lagarde, Philippe; and Dozov, Ivan, to Centre National de la Recherche Scientifique (CNRS). Electro-optical devices using liquid crystals having a twist in a plane perpendicular to substrates. 4,564,266, Cl. 350-340.000.

Durr-Dental GmbH & Co. KG: *See*—
Hofmann, Hans-Joachim, 4,564,374, Cl. 55-57.000.

Durrant, John T., to Garden Way Incorporated. Non-incremental clutch adjustment arrangement. 4,564,358, Cl. 474-101.000.

E. R. Squibb & Sons, Inc.: *See*—
Heyer, Robert E.; and Tannenbaum, Michael A., 4,564,118, Cl. 220-8.000.

Eager Weaver (Proprietary) Limited: *See*—
Allihn, Rudiger O. M., 4,564,049, Cl. 139-33.000.

Eastman Kodak Company: *See*—
Baumeister, Hans-Peter, 4,564,869, Cl. 360-46.000.
Begley, William J., 4,564,577, Cl. 430-223.000.
Greisch, Danny L., 4,564,503, Cl. 422-104.000.
Lentz, Carl M.; Overton, James R.; and Cornell, David D., 4,564,701, Cl. 562-406.000.
Sitzler, Klaus; and Steisslinger, Kurt, 4,564,279, Cl. 354-214.000.

Eastman, Lester F.: *See*—
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Easton Corporation: *See*—
Smith, Stanley K.; Rozsi, Donald J.; and Sabroff, Alvin M., 4,564,911, Cl. 364-474.000.

Eastway Holdings Limited: *See*—
Nel, Gert, 4,564,780, Cl. 310-258.000.

Eaton Corporation: *See*—
Kimmons, D. L.; and Russell, Daniel, 4,564,346, Cl. 418-206.000.
Mueller, Robert S., 4,564,345, Cl. 418-206.000.
Smith, Stanley K.; and Rozsi, Donald J., 4,564,910, Cl. 364-474.000.

Ebisawa, Hiroo: *See*—
Fujimori, Yoshitsugu; Adachi, Ryouhei; Ebisawa, Hiroo; Kurachi, Yukio; and Koike, Masami, 4,564,232, Cl. 296-146.000.

Eckert, Charles E., to Aluminum Company of America. Apparatus and method for ultrasonic detection of inclusions in molten metals. 4,563,895, Cl. 73-61.00R.

Eckhardt, Wolfgang: *See*—
Kunz, Walter; Eckhardt, Wolfgang; and Hubele, Adolf, 4,564,629, Cl. 514/472.000.
Ecsery, Zoltan; Somfai, Eva; Hermann nee Voros, Judit; Nagy, Lajos; Szabo, Gabor; Orban, Otto; and Arvai, Laslzo, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Process for the preparation of propargyl amines. 4,564,706, Cl. 564-376.000.
Edo Corporation: *See*—
Lender, Robert J., 4,563,808, Cl. 29-596.000.
Edwards, Robert C.: *See*—
Udovich, Carl A.; and Edwards, Robert C., 4,564,688, Cl. 549-259.000.
Edwards, William B.: *See*—
Hamlin, Thomas J.; and Edwards, William B., 4,564,185, Cl. 270-53.000.
Egami, Hidemi: *See*—
Nakamura, Shunji; Kan, Fumitaka; Egami, Hidemi; Hosoi, Atsushi; Tajima, Hatsuo; and Nakahata, Kimio, 4,563,978, Cl. 118-658.000.
Egan, Richard G., to Polaroid Corporation. Electronic image sensing and printing apparatus. 4,564,853, Cl. 346-160.000.
Egri, Laszlo, to Tamag Basel AG. Smokable, coherent sheet and method for its manufacture. 4,564,031, Cl. 131-353.000.
Ehrenkranz, Joel R. Body liquid temperature measuring device. 4,564,299, Cl. 374-157.000.
Ehrl, Winfried; Reng, Alwin; and Quack, Jochen M., to Hoechst Aktiengesellschaft. Hair shampoos and body cleansing agents having a content of alkylsulfatobetaines. 4,564,520, Cl. 424-70.000.
Ehrlich, Hans W.: *See*—
Fremaux, Jacques M.; and Ehrlich, Hans W., 4,564,404, Cl. 149-21.000.
Eiji, Kishida; Hideo, Kobayashi; and Hidekazu, Kano, to Honda Giken Kogyo Kabushiki Kaisha. Fuel supply control system for engine carburetors. 4,563,990, Cl. 123-438.000.
Eisai Co., Ltd.: *See*—
Sugimoto, Hachiro; Nakamura, Takaharu; Hamazo, Sachiyuki; and Daiku, Yoshiharu, 4,564,617, Cl. 514-265.000.
Ekman, Kjell R. Pressure-reduction device for pressurized coupling members. 4,564,042, Cl. 137-614.050.
Elbert, Alfred; Behrenz, Wolfgang; and Krehan, Ingomar, to Bayer Aktiengesellschaft. Baits for combating vermin. 4,564,631, Cl. 514-521.000.
Electro Materials Corp. of America: *See*—
Martin, F. Wayne; Shahbazi, Samson; and Schoonejongen, Ronald J., 4,564,563, Cl. 428-546.000.
ELEKTRONIKBAU Krippner & Kletzmaier Gesellschaft m.b.H. & Co.: *See*—
Kletzmaier, Karl; and Krippner, Gunther, 4,563,886, Cl. 70-118.000.
Elektroschmelzwerk Kempten GmbH: *See*—
Kriegesmann, Jochen; Hunold, Klaus; Lipp, Alfred; Reinmuth, Klaus; and Schwetz, Karl A., 4,564,601, Cl. 501-88.000.
Elliott, Douglas C.; Sealock, L. John, Jr.; and Hallen, Richard T., to Gas Research Institute. Ammonia-based catalyst for water-gas shift reaction. 4,564,516, Cl. 423-655.000.
Elliott, Guy R. B. Reductive decontamination of magnesium fluoride. 4,564,507, Cl. 423-5.000.
Elliott Turbomachinery Co., Inc.: *See*—
Heckel, Bruce G., 4,564,084, Cl. 184-6.110.
Ellis, Paul E., Jr.: *See*—
Hsu, Chao-Yang; and Ellis, Paul E., Jr., 4,564,711, Cl. 568-454.000.
El-Saba, Mekki M.: *See*—
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El-Sayed, Aziz: *See*—
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Elxsi: *See*—
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Endo, Fumihiro: *See*—
Ishikawa, Toshio; Endo, Fumihiro; Yamagiwa, Tokio; and Kamata, Yuzuru, 4,564,721, Cl. 174-10.000.
Energy Exchange Systems: *See*—
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Engels, Hans D.: *See*—
Dickore, Karlfried; Engels, Hans D.; Kratzer, Hans; and Merz, Walter, 4,564,704, Cl. 562-577.000.
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Neri, Carlo; Giroldini, Villiam; Rinaldi, Antonio; Traversoni, Mario; and Clerici, Mario, 4,564,691, Cl. 549-462.000.
Enkel Corporation: *See*—
Keene, John F.; Kuller, Bengt L.; and Kemmeter, Robert G., 4,564,150, Cl. 242-58.100.
Enokido, Shunji; Kodani, Hideyuki; and Ohta, Hajime, to Fujitsu Limited. Apparatus for storing felt pens for an electronic board. 4,564,078, Cl. 178-18.000.
Enomoto, Hiroshi: *See*—
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Ensign-Bickford Industries, Inc.: *See*—
Pallanck, Robert G., 4,564,405, Cl. 149-21.000.
Tietje, Andreas, 4,564,759, Cl. 250-324.000.
Ermeto Armaturen GmbH: *See*—
Kohnlechner, Rainer, 4,563,902, Cl. 73-708.000.
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Rosenberg, Michael J.; and Erpel, Alfred C., 4,564,303, Cl. 400-208.000.
ESAB Aktiebolag: *See*—
Karlsson, Rolf L., 4,564,742, Cl. 219-130.100.
Escher Wyss GmbH: *See*—
Wuhrer, Wolfgang, 4,563,940, Cl. 92-106.000.
Eschmann, Heinz, to Windmoller & Holscher. Apparatus for filling sacks. 4,563,864, Cl. 53-570.000.
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, to Didier-Werke AG. Process for producing a plastic composition which can be processed into a fire-resistant material. 4,564,485, Cl. 264-30.000.
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Young, James E., 4,564,798, Cl. 320-6.000.
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Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.
Ess GmbH Skibindungen: *See*—
Luitz, Max; and Weiss, Eugen, 4,564,211, Cl. 280-605.000.
Esselte Pendaflex Corporation: *See*—
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Essex Group, Inc.: *See*—
Pali, Christopher, 4,564,151, Cl. 242-68.300.
Esslinger, James J. BB Loader. 4,564,125, Cl. 221-288.000.
Estes, Jeffrey M., to Sciaky Bros., Inc. Method for alignment of an electron beam to the adjacent faces of segments of rock drill bits. 4,564,738, Cl. 219-121.0ED.
Estreicher, Herbert, to Shell Oil Company. Use of 4-(hydroxyiminomethyl)cinnoline and congeners thereof for controlling the growth of unwanted plants. 4,564,383, Cl. 71-92.000.
Ethicon, Inc.: *See*—
Lilenfeld, Robert; Popadiuk, Nicholas M.; Steinheuser, Peter; and Menezes, Edgar, 4,564,013, Cl. 128-335.500.
Ethyl Corporation: *See*—
Barda, Henry J., 4,564,468, Cl. 252-609.000.
Sutker, Burton J., 4,564,697, Cl. 560-83.000.
Eulenburg, Jurgen, to Josef Wischerath GmbH & Co., KG. Dispenser for paste-like products. 4,564,130, Cl. 222-207.000.
Evans, Lawrence J.; Sheikh, Junaid; Stock, Rodney D.; and Turkowski, Kenneth E. J., to Ampex Corporation. YIQ Computer graphics system. 4,564,915, Cl. 364-521.000.
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Samelson, Samuel, 4,563,785, Cl. 5-472.000.
Excalibur Locks, Inc.: *See*—
Madden, Roy H., 4,563,885, Cl. 70-97.000.
Excellon Industries: *See*—
Roberts, William E.; and Cripps, Milo, 4,564,326, Cl. 414-131.000.
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Doherty, Alfred E., Jr., 4,564,226, Cl. 285-334.000.
Exxon Production Research Co.: *See*—
Rubinstein, Ian; and Woodford, Raymond B., 4,564,069, Cl. 166-288.000.
Exxon Research & Engineering Co.: *See*—
Best, Steven A., 4,564,606, Cl. 502-117.000.
Rauline, Alain J., 4,564,467, Cl. 252-573.000.
Eyerly, Robert M.: *See*—
Roche, Karen M.; and Eyerly, Robert M., 4,563,778, Cl. 623-22.000.
Ezaki, Joichiro; Kanai, Hiroshi; and Kitahara, Yoshimi, to TDK Corporation. Magnetic recording/reproducing system with wide-gapped transducer and method for using same. 4,564,877, Cl. 360-114.000.
F.M.P. Enterprise, Inc.: *See*—
Burke, Victor B.; and Burkholder, Charles R., 4,564,737, Cl. 219-121.0LH.
Fabian, Peter: *See*—
Werdecker, Waltraud; and Fabian, Peter, 4,564,433, Cl. 204-254.000.
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Biller, Victor; and Faessler, Adelmar, 4,564,044, Cl. 137-625.240.
Fairweather, Michael J.; Rockandel, Michael A.; Sadan, Abraham; and Swinkels, Godefridus M., to Cominco Ltd. Process for the recovery of sodium carbonate from salt mixtures. 4,564,508, Cl. 423-189.000.
Falckenberg, Richard; and Grabmaier, Josef, to Siemens Aktiengesellschaft. Apparatus for manufacturing large-surface, band-shaped silicon for solar cells. 4,563,979, Cl. 118-694.000.
Falckenberg, Richard: *See*—
Foell, Helmut; Grabmaier, Josef; and Falckenberg, Richard, 4,563,976, Cl. 118-401.000.
Fanuc Ltd.: *See*—
Komiya, Hidetsugu; and Inoue, Michiya, 4,564,768, Cl. 307-140.000.
Farber, Ernst-Ove, to Peters, Claudius. Silo for storing solidifying loose material, especially flue dust. 4,564,317, Cl. 406-56.000.
Fast, Jacob. Cover strip for display shelf. 4,564,548, Cl. 428-121.000.

Faughnan, Brian W.; and Hanak, Joseph J., to United States of America, Energy. Direct determination of quantum efficiency of semiconducting films. 4,564,808, Cl. 324-158.00R.
Favorite Manufacturing, Inc.: *See*—
Martin, Eugene G.; and Martin, Harold C., 4,563,791, Cl. 17-11.000.
Featherstone, John L.: *See*—
Gritters, Gregory A.; Nellis, Walter E.; and Featherstone, John L., 4,564,298, Cl. 366-167.000.
Febco Inc.: *See*—
Lackey, Darrell D., 4,564,095, Cl. 192-59.000.
Fecik, Michael T.; Cannon, Gary V.; and Beresik, Gayland S., to PPG Industries, Inc. Antibacklash conveyor drive mechanism. 4,564,380, Cl. 65-163.000.
Feldmann, John; Koebernick, Hubert; Richter, Klaus; and Woelk, Hans-Ulrich, to CPC International Inc. Process for recovering pure crystalline monoanhydrohexitols and dianhydrohexitols. 4,564,692, Cl. 549-464.000.
Festo KG: *See*—
Trittler, Karl, 4,564,043, Cl. 137-624.180.
Fickert, Werner: *See*—
Orth, Winfried; Pastorek, Emmerich; and Fickert, Werner, 4,564,700, Cl. 562-405.000.
Fieder, Donald W.; Stanton, Joseph J.; Fisher, Christopher E.; and Cutler, Orvid R., Jr., to DeSoto, Inc. Urethane acrylates based on polyepichlorohydrin polyether diols and optical fiber coatings based thereon. 4,564,666, Cl. 522-33.000.
Figgie International Inc.: *See*—
Biller, Victor; and Faessler, Adelmar, 4,564,044, Cl. 137-625.240.
Fillot, Alain; Gallet, Jean; Paltrier, Sylvain; and Schaub, Bernard, to Commissariat a l'Energie Atomique. Process for producing ternary or quaternary semiconductor compounds. 4,564,415, Cl. 156-604.000.
Findlay, John W. A.; and Coker, Geoffrey G. Diphenylmethane compounds. 4,564,685, Cl. 548-578.000.
Fink, Hans-Ferdi: *See*—
Callaghan, Ian C.; Fink, Hans-Ferdi; Gould, Clive M.; Koerner, Gotz; Patzke, Hans-Jurgen; and Weitemeyer, Christian, 4,564,665, Cl. 528-21.000.
Fink, Howard F.: *See*—
Allen, R. Daniel; and Fink, Howard F., 4,564,164, Cl. 248-118.000.
Finter, Jurgen; and Fischer, Walter, to Ciba-Geigy Corporation. Novel thioxanthones substituted by alpha-aminoalkyl groups. 4,564,578, Cl. 430-270.000.
Firestone, Raymond A., to Merck & Co., Inc. Allylsulfoxide enzyme inhibitors. 4,564,635, Cl. 514-562.000.
Firestone Tire & Rubber Company, The: *See*—
Leonard, Daniel J., 4,564,177, Cl. 267-64.240.
Firm Alberto Cipelletti: *See*—
Cipelletti, Alberto, 4,563,880, Cl. 62-234.000.
Firth, Francis G. Vibratory treatment of moving surfaces. 4,564,297, Cl. 366-108.000.
Fischer, Heinz J.: *See*—
Bechthold, Horst; Fischer, Heinz J.; and Schulte, Wolfgang, 4,564,510, Cl. 423-235.000.
Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Rotary printing machine with paper guide. 4,563,950, Cl. 101-178.000.
Fischer & Porter Company: *See*—
Geisler, Gottfried; and Breithaupt, Jorg-Ulrich, 4,563,904, Cl. 73-861.120.
Fischer, Walter: *See*—
Finter, Jurgen; and Fischer, Walter, 4,564,578, Cl. 430-270.000.
Fisher, Christopher E.: *See*—
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Fisher & Paykel Limited: *See*—
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Fisher, Ronald D.: *See*—
Kingsley, Bertis N.; and Fisher, Ronald D., 4,564,209, Cl. 280-468.000.
Fisons plc: *See*—
Young, David M.; and Blower, Andrew W., 4,564,360, Cl. 604-183.000.
Fleck, Otto W.: *See*—
Achtenberg, Irving; and Fleck, Otto W., 4,563,852, Cl. 52-743.000.
Fletcher Sutcliffe Wild Limited: *See*—
Bower, Lewis R. B., 4,564,047, Cl. 137-627.500.
Flohrs, Peter, to Robert Bosch GmbH. Integrated Darlington transistor combination including auxiliary transistor and Zener diode. 4,564,771, Cl. 307-315.000.
Flynn, George C.; Salem, Eli; and Kunin, Robert, to Graver Company, The. Three component resin system and method for purifying aqueous solutions. 4,564,455, Cl. 210-675.000.
Foell, Helmut; Grabmaier, Josef; and Falckenberg, Richard, to Siemens Aktiengesellschaft. Device for manufacturing large-surface, tape-shaped silicon bodies for solar cells. 4,563,976, Cl. 118-401.000.
Fogarty, Thomas J.; and Chin, Albert K., to Fogarty, Thomas J. Variable length dilatation catheter apparatus and method. 4,564,014, Cl. 128-344.000.
Folienwalzwerk Bruder Teich Aktiengasellschaft: *See*—
Prohaska, Helmut, 4,564,116, Cl. 215-256.000.
Ford Motor Company: *See*—
Runkle, Franklin D.; and Tennenhouse, Gerald J., 4,563,924, Cl. 82-1.00C.
Form, Ernst: *See*—
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Forschungsgesellschaft fur Energietechnik und Verbrennungsmotoren mbH: *See*—
Pischinger, Franz; and Sollner, Robert, 4,563,982, Cl. 123-1.00A.
Fortenberry, Charles K. Cam lock knife structure. 4,563,813, Cl. 30-161.000.
Fournier, Paul J. E., to Aeroquip Corporation. Conduit clamp. 4,563,795, Cl. 24-19.000.
Fox, Karl M.: *See*—
Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., 4,564,369, Cl. 44-2.000.
Fox, Wayne D.; and Gheer, Barry J., to Xerox Corporation. Blade cleaner apparatus for removing toner from a charge-retentive surface. 4,564,283, Cl. 355-15.000.
Franklin, Robert C.: *See*—
Parkes, Christopher W.; and Franklin, Robert C., 4,564,795, Cl. 318-314.000.
Franz Muller GmbH & Co.: *See*—
Vroomen, Albert, 4,563,798, Cl. 26-10.00C.
Franz Plasser Bahnoaumaschinen-Industriegesellschaft mbH: *See*—
Theurer, Josef, 4,563,953, Cl. 104-12.000.
Frazer, August H.; and Harris, John F., Jr., to Du Pont de Nemours, E. I., and Company. Bis(aminoneopentyl) aromatics. 4,564,705, Cl. 564-337.000.
Fredericks, Edward C.; and Kotecha, Harish N., to International Business Machines Corporation. Photoresist lift-off process for fabricating semiconductor devices. 4,564,584, Cl. 430-312.000.
Freeman, Richard L.: *See*—
Ikezi, Hiroyuki; and Freeman, Richard L., 4,564,807, Cl. 324-158.00D.
Freitag, Dieter: *See*—
Dicke, Hans-Rudolf; Schmidt, Manfred; El-Sayed, Aziz; Biskup, Ulrich; Bottenbruch, Ludwig; and Freitag, Dieter, 4,564,669, Cl. 528-173.000.
Fremaux, Jacques M.; and Ehrlich, Hans W., to Societe Anonyme d'Explosifs et de Produits Chimiques. Inert paste of the nitrate-fuel type, explosive product obtained therefrom by the incorporation of air and processes of manufacture thereof. 4,564,404, Cl. 149-21.000.
French, Tommy: *See*—
Cain, C. Dean, Jr.; and Bean, Ronnie A., 4,563,830, Cl. 43-4.500.
Frenzl, Otto. Appliance for practicing aquatic sports. 4,564,190, Cl. 272-17.000.
Fresenius AG: *See*—
Weber, Wolfram; Neumann, Hans-Jurgen; Meisberger, Artur; and Mathieu, Bernd, 4,564,342, Cl. 417-477.000.
Freud, Paul J.: *See*—
Baxter, Ronald D.; and Freud, Paul J., 4,564,882, Cl. 361-286.000.
Freudewald, Joachim E.: *See*—
Virgilio, Joseph A.; and Freudewald, Joachim E., 4,564,714, Cl. 568-776.000.
Freyssinet International (STUP): *See*—
Guinard, Pierre, 4,563,850, Cl. 52-396.000.
Friedman, Allen. Garment with built-in interior support structure. 4,564,015, Cl. 128-455.000.
Frito-Lay, Inc.: *See*—
Tate, Warren L., 4,563,944, Cl. 99-355.000.
Frohning, Carl D.: *See*—
Bussemeier, Bernd; Frohning, Carl D.; Horn, Gerhardt; and Kluy, Werner, 4,564,642, Cl. 518-717.000.
Froidh, Arne: *See*—
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Frye, Sally Z. Helicopter rescue basket. 4,564,161, Cl. 244-137.00P.
Fuchs Systemtechnik GmbH: *See*—
Minarik, Ferdinand; and Paletzki, Hans-Joachim, 4,563,958, Cl. 110-219.000.
Fudenberg, Herman H.; and Tsang, Kwong Y. Method for evaluating parameters related to the therapeutic and/or prophylactic treatment of solid neoplasms in humans. 4,564,517, Cl. 424-9.000.
Fuji Photo Film Co., Ltd.: *See*—
Aoki, Kozo; Ono, Michio; and Nakazyo, Kiyoshi, 4,564,586, Cl. 430-505.000.
Hishinuma, Kazuhiro; and Ohga, Akihiro, 4,564,861, Cl. 358-111.000.
Noguchi, Masaru; Horikawa, Kazuo; and Ohga, Akihiro, 4,564,760, Cl. 250-327.200.
Ohmura, Hiroshi, 4,564,278, Cl. 354-195.120.
Oishi, Kengo; and Suzuki, Osamu, 4,564,157, Cl. 242-199.000.
Fuji Seiko Limited: *See*—
Kondo, Kunio; Haga, Katutoshi; and Takeuchi, Tokunari, 4,564,321, Cl. 407-36.000.
Fujii, Tsunenori: *See*—
Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.
Fujimori, Yoshitsugu; Adachi, Ryouhei; Ebisawa, Hiroo; Kurachi, Yukio; and Koike, Masami, to Honda Giken Kogyo Kabushiki Kaisha. Automobile door. 4,564,232, Cl. 296-146.000.
Fujino, Yoshiharu; Kawai, Hajime; Nakai, Yasushi; and Tsunemitsu, Katsuhiko, to Yamada Chemical Co., Ltd. Chromogenic compounds. 4,564,679, Cl. 546-116.000.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Ueda, Ikuo; Nagano, Masanobu; and Akahane, Atsushi, 4,564,621, Cl. 514-357.000.

Fujishita, Toshio: *See*—
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Fujita, Hiroshi: *See*—
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Fujita, Takashi: *See*—
Suzuki, Takashi; Shinohara, Koichi; Odagiri, Masaru; and Fujita, Takashi, 4,564,549, Cl. 428-141.000.
Fujita, Tsutomu: *See*—
Sakai, Hiroyuki; Takemoto, Toyoki; Kawakita, Kenji; Fujita, Tsutomu; and Akiyama, Atsuko, 4,563,807, Cl. 29-591.000.
Fujitsu Limited: *See*—
Enokido, Shunji; Kodani, Hideyuki; and Ohta, Hajime, 4,564,078, Cl. 178-18.000.
Fukuda, Yuji, 4,564,280, Cl. 354-317.000.
Miwa, Hirohide, 4,564,019, Cl. 128-660.000.
Tanizawa, Tetsu; Omichi, Hitoshi; and Mitono, Yoshiharu, 4,564,773, Cl. 307-445.000.
Yasuda, Hiroshi; Kawashima, Kenichi; Miyazaki, Takayuki; and Kobayashi, Koichi, 4,564,764, Cl. 250-491.100.
Fujiwara, Koji, to Kabushiki Kaisha Takuma. Step type stoker with oscillation mechanism. 4,563,959, Cl. 110-281.000.
Fukuda, Yuji, to Fujitsu Limited. Method and apparatus for developing resist film including a movable nozzle arm. 4,564,280, Cl. 354-317.000.
Fukui, Tomonori: *See*—
Yamada, Motokazu; Hayakawa, Hideyuki; Fukui, Tomonori; Matsuhashi, Hajime; Kaneko, Yasuhiro; Ikeda, Motozo; and Nagata, Tomihiko, 4,564,917, Cl. 364-565.000.
Fukuiri, Masaru: *See*—
Higashi, Haruki; Waki, Kouichirou; Fukuiri, Masaru; and Yukitomo, Kazuo, 4,563,917, Cl. 74-866.000.
Fukushi, Yukihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Document feeder. 4,564,792, Cl. 318-254.000.
Fulberth, Werner: *See*—
Muschaweck, Roman; Fulberth, Werner; and Sickmuller, Alfred, 4,564,625, Cl. 514-429.000.
Fullerform, Inc.: *See*—
Gallagher, Roger W., 4,564,314, Cl. 405-155.000.
Funabashi, Tadashi; Takahashi, Junji; and Kato, Kyoichi, to Pioneer Electronic Corporation. Disc carrying system. 4,564,930, Cl. 369-75.200.
Furst, Leander; Holzer, Walter; and Kastening, Bertel, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Ammoniated etching solution and process for its regeneration utilizing ammonium chloride addition. 4,564,428, Cl. 204-107.000.
Furuta, Isao: *See*—
Morita, Hideaki; Kasuya, Takahira; Yamakawa, Goichi; Tomono, Makoto; Furuta, Isao; and Tsuneyoshi, Minoru, 4,564,573, Cl. 430-109.000.
GA Technologies Inc.: *See*—
Ikezi, Hiroyuki; and Freeman, Richard L., 4,564,807, Cl. 324-158.00D.
Gaafar, Hassan A.; and Grimwood, Brian G., to Research Corporation. Toxoplasmosis factor and production of same. 4,564,592, Cl. 435-68.000.
Gaddis, Paul G.: *See*—
Ringlee, David R.; and Gaddis, Paul G., 4,563,929, Cl. 83-840.000.
Gaines, Michael G.: *See*—
Bethell, Michael R.; Gaines, Michael G.; Mowat, James F., Jr.; Wheeler, Roger D.; and Woidke, Richard P., 4,564,138, Cl. 228-176.000.
Gaines, William P. Valve closure means. 4,564,170, Cl. 251-88.000.
Gallagher, Roger W., to Fullerform, Inc. Self-propelled continuous concrete pipe-laying machine. 4,564,314, Cl. 405-155.000.
Gallaro, Anthony V.: *See*—
Baum, Steven A.; Gallaro, Anthony V.; Hovey, Frederick A.; Rehkopf, Charles H.; and Sember, William J., 4,564,786, Cl. 313-479.000.
Gallet, Jean: *See*—
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Gamblin, Rodger L., to Burlington Industries, Inc. Method of making low contact resistance metallic coatings and electrical contacts so produced. 4,564,565, Cl. 428-680.000.
Gansel, Eduard; Schaal, Gunter; Schneider, Helmut; Schramm, Heribert; Seidel, Eberhard; and Zilly, Gunter, to Robert Bosch GmbH. Bench. 4,564,181, Cl. 269-88.000.
Ganz, Rudolf: *See*—
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, 4,564,485, Cl. 264-30.000.
Garabedian, Michael E.; and Morgan, Glenn E., Sr., to Dexide, Inc. Dispenser with pump for dispensing liquid from a collapsible bag. 4,564,127, Cl. 222-96.000.
Garden Way Incorporated: *See*—
Durrant, John T., 4,564,358, Cl. 474-101.000.
Garretson, Jay H.; Lazor, Thomas E.; Merva, John J.; Nestor, Charles R.; Plyler, Robert G.; Seiffert, Raymond C.; and Ziegler, Jeffrey L., to General Motors Corporation. Preloaded electrical connector. 4,564,258, Cl. 339-220.00R.
Garrison, Kevin S.: *See*—
Winer, Richard A.; and Garrison, Kevin S., 4,564,365, Cl. 623-27.000.
Gartner, Karl, to Yoshida Kogyo K.K. Section for building. 4,563,848, Cl. 52-235.000.
Garwood, William E.; Starr, William C.; and Walker, John W., to Mobil Oil Corporation. Viscosity index improvement in dewaxed lube basestock by partial desulfurization in hydrotreat bed. 4,564,440, Cl. 208-87.000.
Gas Research Institute: *See*—
Elliott, Douglas C.; Sealock, L. John, Jr.; and Hallen, Richard T., 4,564,516, Cl. 423-655.000.
Gaylord Bros., Inc.: *See*—
Holzer, Joseph C., 4,564,411, Cl. 156-387.000.
Gazzarrini, Vinicio, to Solis s.r.l. Apparatus and method for rapid loading of pantyhose onto a stocking finishing medium. 4,564,133, Cl. 223-39.000.
Geant Entrepeneur Electrique Ltee: *See*—
Deschenes, Maurice, 4,564,745, Cl. 219-213.000.
Geary, William C.; Mirsaiidi, Mohammad V.; Redfern, Timothy; and Wolfe, David W., to Arrow Specialty Company. Automatic engine control system. 4,563,987, Cl. 123-179.00B.
Gebeke, Charles D.: *See*—
Weavers, Mark W.; Gebeke, Charles D.; and Yamasaki, Ken'ichi, 4,564,878, Cl. 360-132.000.
Gebr. Happich GmbH: *See*—
Kaiser, Klaus-Peter; and Viertel, Lothar, 4,564,234, Cl. 296-97.00H.
Gedzun, Sergei E.: *See*—
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.
Geisler, Gottfried; and Breithaupt, Jorg-Ulrich, to Fischer & Porter Company. Excitation circuit for electromagnetic flowmeter. 4,563,904, Cl. 73-861.120.
Geithman, Glenn A.; and Chau, Albert W., to Boeing Company, The. Aluminum cladding thickness measurement probe and instrument having an automatic calibration and readout circuit coupled to a differential amplifier circuit. 4,564,810, Cl. 324-230.000.
General Dynamics Pomona Division: *See*—
Dugan, William P., 4,564,423, Cl. 204-12.000.
General Electric Company: *See*—
Cooper, Glenn D., deceased; and Kinson, Philip L., 4,564,656, Cl. 525-152.000.
Glover, Gary H., 4,564,017, Cl. 128-653.000.
Grossman, Leonard N.; Landry, James D.; Masaitis, William; Canada, Robert O.; and McKenzie, Gerald W., 4,564,498, Cl. 376-245.000.
Jones, Marshall G.; and Richardson, Donald C., 4,564,736, Cl. 219-121.00L.
Liu, Ping Y., 4,564,655, Cl. 525-92.000.
Liu, Ping Y., 4,564,658, Cl. 525-177.000.
Mills, Kenneth R., 4,564,729, Cl. 179-81.00C.
Terry, Vincent G., Jr., 4,564,779, Cl. 310-258.000.
General Engineering Radcliffe 1979 Ltd.: *See*—
Smart, Gerald, deceased, 4,564,353, Cl. 425-446.000.
General Foods Corporation: *See*—
Watson, Francis L.; Angalet, Stevan A.; and Carlson, Richard A., 4,564,529, Cl. 426-570.000.
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McCann, T. Michael, 4,564,885, Cl. 361-436.000.
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Clitheros, Derek P.; Livingstone, David A.; Roberts, David B.; and Cawthorne, Roland, 4,564,410, Cl. 156-356.000.
Garretson, Jay H.; Lazor, Thomas E.; Merva, John J.; Nestor, Charles R.; Plyler, Robert G.; Seiffert, Raymond C.; and Ziegler, Jeffrey L., 4,564,258, Cl. 339-220.00R.
Hartz, James F.; and Latshaw, Harry E., 4,563,913, Cl. 74-606.00R.
Koestecki, Raymond J., 4,564,491, Cl. 264-108.000.
Steele, Robert E., 4,564,834, Cl. 340-622.000.
General Signal Corporation: *See*—
Baxter, Ronald D.; and Freud, Paul J., 4,564,882, Cl. 361-286.000.
Illenberg, Cornelius J.; Dinger, Ronald W.; Kunde, David A.; and Lucarelli, Anthony V., 4,564,829, Cl. 335-135.000.
Geo-Centers, Inc.: *See*—
Spillman, William B., Jr., 4,564,289, Cl. 356-33.000.
GEO Vann, Inc.: *See*—
Vann, Roy R.; and Brieger, Emmet F., 4,564,076, Cl. 175-4.520.
Gerard, Jean-Louis, to Societe Anonyme D.B.A. Friction-element assembly equipped with an anti-noise spring for a disc brake. 4,564,089, Cl. 188-73.380.
Gerlach, Klaus; and Kessler, Erich, to Akzo NV. Methods for the preparation of porous fibers and membranes. 4,564,488, Cl. 264-41.000.
Gerling, Norbert: *See*—
Kahny, Peter; and Gerling, Norbert, 4,564,136, Cl. 228-6.100.
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Koch, Hans-Carl; Koch, Carl; and Gfeller, Karl, 4,564,277, Cl. 354-160.000.
Ghatas, Nassef E.; and Peacey, John G., to Brunswick Mining and Smelting Corporation Limited. Wet zinc dust atomization and distribution. 4,564,387, Cl. 75-0.50A.
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Gibney, James W. Fishing float. 4,563,831, Cl. 43-44.910.
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Gilson, Russell A.; and Burke, Thomas F., to United States of America, Army. Monolithic impedance matched cascade amplifier. 4,564,817, Cl. 330-286.000.

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Givaudan Corporation: *See*—
Virgilio, Joseph A.; and Freudewald, Joachim E., 4,564,714, Cl. 568-776.000.

Glaxo Group Limited: *See*—
Scopes, David I. C.; Newton, Roger F.; and Cookson, Richard C., 4,564,618, Cl. 514-274.000.

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Underdown, David R.; and Glaze, O. Howard, 4,564,459, Cl. 252-8.55R.

Glenn, William E.; and Marcinka, John W., to New York Institute of Technology. Graphical data apparatus. 4,564,928, Cl. 367-117.000.

Glennon, Timothy F., to Sundstrand Corporation. Neutrally clamped PWM half-bridge inverter. 4,564,895, Cl. 363-41.000.

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Glover, Neal; Clausen, Kermit; Mayne, Chris; and Glissmann, Randy, 4,564,945, Cl. 371-38.000.

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Woolley, Richard N.; Glover, Neal; and Williams, Richard, 4,564,941, Cl. 371-2.000.

Goddard-Watts, Mark, to British Aerospace Public Limited Co. Filament laying apparatus and a method of fabricating a harness. 4,563,812, Cl. 29-857.000.

Goi, Kowichi: *See*—
Kokubo, Eiichi; Arikawa, Junichi; Goi, Kowichi; and Imura, Shinichi, 4,564,140, Cl. 232-57.500.

Goldberg, Israel; and Stieglitz, Barry, to Du Pont de Nemours, E. I., and Company. Fermentation process for production of carboxylic acids. 4,564,594, Cl. 435-139.000.

Goldberg, James R.: *See*—
Cole, Harold E., 4,564,114, Cl. 215-256.000.

Goldman, Leon. Laser optic device and method. 4,564,011, Cl. 128-303.100.

Goldstein, David, to United States of America, Navy. Applying pressure while article cools. 4,564,501, Cl. 419-25.000.

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Montgomery, Douglas J.; Goldstein, Leonard H.; and Stumbo, Ernest, 4,564,141, Cl. 236-20.00R.

Golser, Hans, to Siemens Aktiengesellschaft. Gas laser tube. 4,564,948, Cl. 372-61.000.

Gonzalez, Jorge. Trouble light for vehicles. 4,564,894, Cl. 362-398.000.

Gordon, Arnold Z., to Gould, Inc. Seal for reactive metal anode. 4,564,570, Cl. 429-212.000.

Goris, Heinrich: *See*—
Holz, Joachim; Meier, Wolfgang; Ogorek, Kurt; Goris, Heinrich; and Schwarting, Karl H., 4,564,241, Cl. 299-43.000.

Gorman, Jeremy W. Perforate bearing plate for turbulators in heat exchangers. 4,564,066, Cl. 165-158.000.

Gorog, Sander: *See*—
Toth, Edit; Torley, Jozsef; Hajdu, Istvan; Gorog, Sander; Maderspach, Andrea; Hajos, Gyorgy; Szporny, Laszlo ; and Javor, Andras, 4,564,630, Cl. 514-478.000.

Goshokubo, Kenichi: *See*—
Ohgushi, Masuhito; Ohtsuka, Hiroshi; Asaba, Tsutomu; Hoshi, Hironobu; Goshokubo, Kenichi; Wakui, Takeo; Ishii, Kiminori; Ohno, Masashi; and Okada, Yukio, 4,564,557, Cl. 428-333.000.

Goto, Masuo: *See*—
Shintani, Tsuneo; Kojima, Soichi; and Goto, Masuo, 4,564,493, Cl. 264-209.100.

Gotoh, Motoyuki: *See*—
Hashimoto, Koosuke; and Gotoh, Motoyuki, 4,564,873, Cl. 360-90.000.

Gould, Clive M.: *See*—
Callaghan, Ian C.; Fink, Hans-Ferdi; Gould, Clive M.; Koerner, Gotz; Patzke, Hans-Jurgen; and Weitemeyer, Christian, 4,564,665, Cl. 528-21.000.

Gould, Inc.: *See*—
Gordon, Arnold Z., 4,564,570, Cl. 429-212.000.

Grabmaier, Josef: *See*—
Falckenberg, Richard; and Grabmaier, Josef, 4,563,979, Cl. 118-694.000.
Foell, Helmut; Grabmaier, Josef; and Falckenberg, Richard, 4,563,976, Cl. 118-401.000.

Grant, Edward L.; Stops, Earl E.; and Saltz, Edward, to Hallmark Cards, Inc. Attaching device. 4,564,165, Cl. 248-343.000.

Granzow, Robert H.; Placke, Dale L.; McMorrow, Harold L.; and Nagy, Charles S., to NCR Corporation. Presenter mechanism for use in a sheet dispenser. 4,564,122, Cl. 221-12.000.

Graphic Controls Corporation: *See*—
Pelensky, Joseph; Hubbard, James R.; and Scanlon, John J., 4,564,852, Cl. 346-140.00R.

Grass, Alfred. Pull-out guide for drawers. 4,564,248, Cl. 308-3.800.

Graver Company, The: *See*—
Flynn, George C.; Salem, Eli; and Kunin, Robert, 4,564,455, Cl. 210-675.000.

Green, Howard H.: *See*—
Tomlinson, Christopher J.; and Green, Howard H., 4,564,901, Cl. 364-200.000.

Gregory, Edward F. Ignition article and composition for the rapid ignition of coal or charcoal fires. 4,564,370, Cl. 44-38.000.

Gregory, Lee W., to Marvel Specialty Company. Acoustical shield assembly and mating thread preguide unit. 4,563,965, Cl. 112-302.000.

Gregotsch, Karl: *See*—
Ziegler, Gerhard; Gregotsch, Karl; and von Sivers, Rolf, 4,563,984, Cl. 123-52.00M.

Greisch, Danny L., to Eastman Kodak Company. Mount for fragile test element. 4,564,503, Cl. 422-104.000.

Grether, Paul; Brader, Kurt; and Keller, Bruno, to Sulzer Brothers Limited. Heat insulation window. 4,563,843, Cl. 52-172.000.

Grimm, Helmut: *See*—
Kunde, Klaus; Grimm, Helmut; and Becker, Lorenz, 4,563,884, Cl. 66-93.000.

Grimm, Hermann; Konig, Volkmar; and Karioth, Gernot, to Daimler-Benz Aktiengesellschaft. Equipment part covered by a casing and having a fan. 4,563,942, Cl. 98-2.160.

Grimm, Thomas H., to Mattel, Inc. Track intersection for toy trains. 4,564,162, Cl. 246-432.000.

Grimwood, Brian G.: *See*—
Gaafar, Hassan A.; and Grimwood, Brian G., 4,564,592, Cl. 435-68.000.

Gritters, Gregory A.; Nellis, Walter E.; and Featherstone, John L., to Union Oil Company of California. Hydrofoil injection nozzle. 4,564,298, Cl. 366-167.000.

Grolet, Pierre: *See*—
Layotte, Pierre-Claude; Cholet, Jacques; Grolet, Pierre; and Huin, Roland, 4,564,083, Cl. 181-114.000.

Grossman, Leonard N.; Landry, James D.; Masaitis, William; Canada, Robert O.; and McKenzie, Gerald W., to General Electric Company. System for the analysis of nuclear fuel rods. 4,564,498, Cl. 376-245.000.

Groteke, Daniel E.; and Kearney, Avery L., to Metcast Associates, Inc. Molten metal transfer crucible with external filter. 4,564,175, Cl. 266-227.000.

Gruver, Gary A.; and Kunz, Harold R., to United Technologies Corporation. Circulating electrolyte electrochemical cell having gas depolarized cathode with hydrophobic barrier layer. 4,564,427, Cl. 204-98.000.

GTE Automatic Electric Incorporated: *See*—
Perry, Thomas J.; and Khera, Muhammad; I., 4,564,937, Cl. 370-58.000.

Guest, Manual T.: *See*—
Lancaster, Eldon R.; Guest, Manual T.; and Bessire, Robert W., 4,564,732, Cl. 200-307.000.

Guinard, Pierre, to Freyssinet International (STUP). Devices for assembling together the slabs of concrete constituting highways. 4,563,850, Cl. 52-396.000.

Gupta, Ashok K.; Gyarmati, Erno ; Kreutz, Hermann; Munzer, Rudolf; Naoumidis, Aristides; and Nickel, Hubertus, to Kernforschungsanlage Julich GmbH. Method of making porous silicon carbide bodies. 4,564,496, Cl. 264-44.000.

Gupta, Debabrata; and Yarwood, John C., to Olin Corporation. Decarburizing a metal or metal alloy melt. 4,564,390, Cl. 75-51.700.

Gupton, John, to Respiratory Care, Inc. Variable temperature heating control system for inhalation therapy apparatus. 4,564,748, Cl. 219-497.000.

Gustav Wiegard Maschinenfabrik: *See*—
Schrewe, Hans; Pleschiutschnigg, Fritz-Peter; van Bonn, Hans; Holter, Karl; and Wiegard, Gustav, 4,564,058, Cl. 164-72.000.

Gustavsson, Bengt. Fluid transfer system. 4,564,054, Cl. 141-329.000.

Guyette, Richard R.; Hall, Eddie T.; Meritt, Allan S.; Newson, Stephen R.; Scalzi, Casper A.; and Sears, Glenn W., Jr., to International Business Machines Corporation. Partitioned multiprocesor programming system. 4,564,903, Cl. 364-300.000.

Gyarmati, Erno : *See*—
Gupta, Ashok K.; Gyarmati, Erno ; Kreutz, Hermann; Munzer, Rudolf; Naoumidis, Aristides; and Nickel, Hubertus, 4,564,496, Cl. 264-44.000.

Gyurik, Robert J.: *See*—
Bagnall, Brian G.; and Gyurik, Robert J., 4,564,363, Cl. 604-891.000.

H. B. Fuller Company: *See*—
Hume, Robert M., III; LaBrash, Robert A.; and Vander Giessen, Michael J., 4,564,649, Cl. 524-13.000.

Haarasilta, Asko, to Vaasanmylly Oy. Fodder and process for production thereof. 4,564,524, Cl. 426-74.000.

Haas, Johannes: *See*—
Nonn, Konrad; Wolf, Karlheinz; Haas, Johannes; and Paulat, Volker, 4,564,632, Cl. 514-522.000.

Haas, Max, to Inventio AG. Double panel sliding door, especially for elevators. 4,564,087, Cl. 187-56.000.

Habich, Dieter, to Bayer Aktiengesellschaft. 6-Unsubstituted-7-oxo-4-oxa-diazabicyclo(3.2.0)hept-2-ene derivatives. 4,564,473, Cl. 260-245.400.

Haga, Katutoshi: *See*—
Kondo, Kunio; Haga, Katutoshi; and Takeuchi, Tokunari, 4,564,321, Cl. 407-36.000.

Hagen, Wilhelm: *See*—
Becher, Dieter; Konig, Christian; Tiemann, Eckhard; Czwalinna, Hans; and Hagen, Wilhelm, 4,564,513, Cl. 423-415.00A.

Haist, Edward A. Restraint apparatus for cargo box doors. 4,564,230, Cl. 292-218.000.

Hajdu, Istvan: *See*—
Toth, Edit; Torley, Jozsef; Hajdu, Istvan; Gorog, Sander; Maderspach, Andrea; Hajos, Gyorgy; Szporny, Laszlo ; and Javor, Andras, 4,564,630, Cl. 514-478.000.

Hajek, Manfred: *See*—
Salzburg, Herbert; Hajek, Manfred; and Meyborg, Holger, 4,564,645, Cl. 521-159.000.

Hajos, Gyorgy: *See*—
Toth, Edit; Torley, Jozsef; Hajdu, Istvan; Gorog, Sander; Maderspach, Andrea; Hajos, Gyorgy; Szporny, Laszlo ; and Javor, Andras, 4,564,630, Cl. 514-478.000.

Halasz, Andrew: *See*—
Bressan, Renato J.; Halasz, Andrew; and Maccherone, Lawrence S., 4,563,887, Cl. 72-84.000.

Halbherr, Gerd: *See*—
Spindeler, Heinz; Wackerbarth, Folkard; and Halbherr, Gerd, 4,564,419, Cl. 202-123.000.

Halioua, Maurice, to New York Institute of Technology. Apparatus and method for projection moire topography. 4,564,295, Cl. 356-376.000.

Hall, Eddie T.: *See*—
Guyette, Richard R.; Hall, Eddie T.; Meritt, Allan S.; Newson, Stephen R.; Scalzi, Casper A.; and Sears, Glenn W., Jr., 4,564,903, Cl. 364-300.000.

Hallen, Richard T.: *See*—
Elliott, Douglas C.; Sealock, L. John, Jr.; and Hallen, Richard T., 4,564,516, Cl. 423-655.000.

Hallman, Robert W.; Langlais, Eugene L.; and Warner, Patrick G., to Advanced Imaging Systems Ltd. Image-forming composite with film. 4,564,589, Cl. 430-524.000.

Hallmark Cards, Inc.: *See*—
Grant, Edward L.; Stops, Earl E.; and Saltz, Edward, 4,564,165, Cl. 248-343.000.

Hama, Hiroaki; Imanishi, Masami; and Tanaka, Naoki, to Mitsubishi Denki Kabushiki Kaisha. Heat pump with capillary tube-type expansion device. 4,563,879, Cl. 62-160.000.

Hamane, Masumi; Onda, Takanori; and Baba, Masayoshi, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle cooling system. 4,564,081, Cl. 180-229.000.

Hamazo, Sachiyuki: *See*—
Sugimoto, Hachiro; Nakamura, Takaharu; Hamazo, Sachiyuki; and Daiku, Yoshiharu, 4,564,617, Cl. 514-265.000.

Hamlin, Thomas J.; and Edwards, William B., to Xerox Corporation. Copying apparatus with finisher having stapler and adhesive binder stations. 4,564,185, Cl. 270-53.000.

Hanak, Joseph J.: *See*—
Faughnan, Brian W.; and Hanak, Joseph J., 4,564,808, Cl. 324-158.00R.

Hancock, Warren J.: *See*—
Brunswick, Robert; and Hancock, Warren J., 4,563,786, Cl. 8-159.000.

Handte, Reinhard: *See*—
Bieringer, Hermann; Burstell, Helmut; Handte, Reinhard; Kocher, Helmut; and Schulze, Ernst-Friedrich, 4,564,381, Cl. 71-88.000.
Kussmaul, Ulrich; Becherer, Johannes; Handte, Reinhard; and Muller, Rolf, 4,564,682, Cl. 548-169.000.
Liebl, Rainer; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; and Bieringer, Hermann, 4,564,382, Cl. 71-88.000.

Hannah, Joseph R., to Mavie Limited. Method and apparatus for sealing a discontinuity in a tubular assembly. 4,564,201, Cl. 277-1.000.

Hansen, Bjorn N., to International Standard Electric Corporation. Handsfree telephone. 4,564,939, Cl. 370-85.000.

Hansen, William D.; and Mix, Raymond F., to ITT Corporation. Leadless chip carrier adapter. 4,564,251, Cl. 339-17.0CF.

Hanyu, Susumu, to Janome Sewing Machine Co., Ltd. Method of forming stop stitches in a computerized sewing machine. 4,563,963, Cl. 112-266.100.

Haquet, Yvon: *See*—
Loutaty, Roben; and Haquet, Yvon, 4,564,328, Cl. 414-301.000.

Harada, Kunio; Yamaguchi, Sumio; Kanda, Hiroshi; Ishikawa, Isao; and Ohji, Yuzuru, to Hitachi, Ltd. Acoustic microscope. 4,563,900, Cl. 73-644.000.

Harmsen, Siegfried; Papst, Georg F.; and Wrobel, Gunter, to Papst-Motoren GmbH & Co. KG. Axial flow fan. 4,564,335, Cl. 415-213.00C.

Harnish, James R., to Borg-Warner Corporation. Control system and method for defrosting the outdoor coil of a heat pump. 4,563,877, Cl. 62-80.000.

Harpel, William L.; Purnell, Deborah L.; and Pilny, Richard J., to Betz Laboratories, Inc. Hectorite based paint spray booth detackifying slurries and methods of use thereof. 4,564,464, Cl. 252-181.000.

Harrap, Kenneth R.: *See*—
Jones, Terence R.; Harrap, Kenneth R.; and Calvert, Alan H., 4,564,616, Cl. 514-260.000.

Harris Corporation: *See*—
Resch, William A., 4,564,858, Cl. 358-21.00R.
Sanderson, Gary M.; and White, Charles M., 4,564,856, Cl. 358-10.000.

Harris Graphics Corporation: *See*—
Bell, David D.; and Dobson, Gary A., 4,564,290, Cl. 356-73.000.
Noll, Harry C., Jr., 4,564,189, Cl. 271-201.000.

Harris, John F., Jr.: *See*—
Frazer, August H.; and Harris, John F., Jr., 4,564,705, Cl. 564-337.000.

Harris, William I., to Dow Chemical Company, The. Ion exchange resins prepared by sequential monomer addition. 4,564,644, Cl. 521-28.000.

Hart, Milburn L.; and Hart, Robert J., to Resource Engineering & Manufacturing Company. Internal grit blast weld joint cleaner. 4,563,841, Cl. 51-411.000.

Hart, Robert J.: *See*—
Hart, Milburn L.; and Hart, Robert J., 4,563,841, Cl. 51-411.000.

Hartig, Alfred, to Ruhrtal-Elektrizitatsgesellschaft Hartig GmbH & Co. Scissor-type disconnect switch with contact elements having wear-resistant armatures. 4,564,731, Cl. 200-269.000.

Hartman, Ronald H.: *See*—
Piper, Louis H.; White, J. David; and Hartman, Ronald H., 4,564,450, Cl. 210-293.000.

Hartmann, Jorgen: *See*—
Birch, Leon; and Hartmann, Jorgen, 4,564,955, Cl. 381-69.000.

Hartz, James F.; and Latshaw, Harry E., to General Motors Corporation. Side-by-side engine and transmission assembly. 4,563,913, Cl. 74-606.00R.

Hasegawa, Junzo; Kawabata, Susumu; Mimura, Nobuharu; and Kitano, Masao, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Driving gear of rotor type open end fine spinning machine. 4,563,874, Cl. 57-406.000.

Hasenauer, Dieter; and Hug, Kuno, to Brown, Boveri & Cie Aktiengesellschaft. Electrochemical storage cell. 4,564,568, Cl. 429-104.000.

Hashimoto, Koosuke; and Gotoh, Motoyuki, to Mitsubishi Denki Kabushiki Kaisha. Magnetic recording and reproducing apparatus. 4,564,873, Cl. 360-90.000.

Hashimoto, Shunichi: *See*—
Konishi, Hiroyuki; Hashimoto, Shunichi; and Oshio, Hiromichi, 4,564,386, Cl. 71-103.000.

Hashimoto, Susumu: *See*—
Tateishi, Hiroshi; and Hashimoto, Susumu, 4,564,399, Cl. 148-31.550.

Hashimoto, Teruo: *See*—
Nakazawa, Junichi; Hashimoto, Teruo; Kaneko, Masanao; and Miyaoka, Takeo, 4,564,676, Cl. 544-21.000.

Hasty, William E., to W F Products Corporation. Universal flashing for roof vent pipes. 4,563,847, Cl. 52-219.000.

Hatano, Michiharu: *See*—
Yamaoka, Hideyuki; Hatano, Michiharu; Miyazaki, Tomio; Shimoda, Teruhisa; and Oki, Koji, 4,564,389, Cl. 75-38.000.

Hatashita, Hiroshi: *See*—
Saitoh, Takeshi; and Hatashita, Hiroshi, 4,564,822, Cl. 331-117.00R.

Hatazawa, Kikuo, to Hitachi, Ltd. Control device for printer which has function of format data printing. 4,564,302, Cl. 400-76.000.

Hatsutta, Susumu; and Kosaka, Takayuki, to Tachikawa Spring Co., Ltd. Lumbar support device. 4,564,235, Cl. 297-284.000.

Hattori, Shintaroo: *See*—
Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.

Hauni-Werke Korber & Co. KG: *See*—
Bantien, Jurgen, 4,564,329, Cl. 414-403.000.
Heitmann, Uwe, 4,564,027, Cl. 131-84.300.
Heitmann, Uwe, 4,564,028, Cl. 131-84.400.
Hinzmann, Alfred; Preisner, Peter M.; and Shu, Timour T., 4,564,029, Cl. 131-94.000.
Wahle, Gunter; Ludszeweit, Dieter; and Heitmann, Uwe, 4,564,026, Cl. 131-84.300.

Hauschildt, Klaus-Robert: *See*—
Markert, Helmut; Rogler, Wolfgang; Kretzschman, Klaus; and Hauschildt, Klaus-Robert, 4,564,651, Cl. 524-589.000.

Hausele, Hans, to Siemens Aktiengesellschaft. Memory module with extra spacing between redundant rows and columns. 4,564,924, Cl. 365-200.000.

Hayafuji, Yoshinari; Sawada, Akashi; Usui, Setsuo; and Shibata, Akikazu, to Sony Corporation Research Center. Single-crystal semiconductor devices and method for making them. 4,564,403, Cl. 148-171.000.

Hayakawa, Hideyuki: *See*—
Yamada, Motokazu; Hayakawa, Hideyuki; Fukui, Tomonori; Matsuhashi, Hajime; Kaneko, Yasuhiro; Ikeda, Motozo; and Nagata, Tomihiko, 4,564,917, Cl. 364-565.000.

Hayama, Kazuhide: *See*—
Tani, Hideki; Arai, Makoto; Sasaki, Takayuki; Hayama, Kazuhide; and Yamashita, Akira, 4,564,560, Cl. 428-411.100.

Hayashi, Hiroshi; Matono, Koichi; Asahi, Satoshi; and Uoi, Michitake, to Idemitsu Kosan Company Limited. Process for the production of polyethylene compositions. 4,564,647, Cl. 523-211.000.

Hayashi, Katsumi: *See*—
Dorer, Casper J., Jr.; and Hayashi, Katsumi, 4,564,460, Cl. 252-73.000.

Hayashi, Motohiko; Karita, Toshiaki; Kotani, Matahira; and Sasaki, Hiromu, to Sharp Kabushiki Kaisha. Image recording arrangement. 4,564,847, Cl. 346-76.0PH.

Hayashi, Yoshimasa; and Itoh, Yoji, to Nissan Motor Co., Ltd. Intercooler arrangement for supercharged internal combustion engine. 4,563,983, Cl. 123-41.210.

Hazue, Masaaki: *See*—
Ueda, Nobuo; Kondo, Susumu; and Hazue, Masaaki, 4,564,472, Cl. 260-113.000.

Heart Interface Corporation: *See*—
Akerson, Steven C., 4,564,896, Cl. 363-56.000.

Heckel, Bruce G., to Elliott Turbomachinery Co., Inc. Method and apparatus for controlling the temperature of oil in an overhead tank. 4,564,084, Cl. 184-6.110.

Hederich, Volker: *See*—
Rolf, Meinhard; Neeff, Rutger; Muller, Walter; and Hederich, Volker, 4,564,680, Cl. 546-155.000.
Hegemann, Franz-Josef: *See*—
Koddenberg, Theo; and Hegemann, Franz-Josef, 4,564,421, Cl. 202-254.000.
Hehl, Karl. Machine base for injection molding machine. 4,564,348, Cl. 425-151.000.
Heidelberger Druckmaschinen AG: *See*—
Muller, Hans, 4,564,183, Cl. 270-21.100.
Heinisch, Richard V.: *See*—
Lewin, Ian; Heinisch, Richard V.; and Tanunliong, Arnold L., 4,564,888, Cl. 362-147.000.
Heinrich Bucher, Firma: *See*—
Bucher, Peter, 4,563,881, Cl. 62-457.000.
Heinzerling, Walter C., to Infusionstechnik Clinico GmbH & Co. Flow regulator for setting and maintaining a constant flow of blood, blood-substitute, or similar liquid. 4,564,171, Cl. 251-209.000.
Heiss, John F.; and Leverenz, Melvin E., to Diamond Crystal Salt Company. Solar salt crystallizer and process for producing salt. 4,564,367, Cl. 23-295.00S.
Heitmann, Uwe, to Hauni-Werke Korber & Co. KG. Apparatus for building a continuous tobacco stream. 4,564,027, Cl. 131-84.300.
Heitmann, Uwe, to Hauni-Werke Korber & Co. KG. Apparatus for making a tobacco filler. 4,564,028, Cl. 131-84.400.
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Wahle, Gunter; Ludszeweit, Dieter; and Heitmann, Uwe, 4,564,026, Cl. 131-84.300.
Heitzenroder, Hans F.; Wachter, Ernst; and Bitsch, Kurt, to Dunlop Aktiengesellschaft. Container for the pressure tight packaging of articles, in particular tennis balls. 4,564,107, Cl. 206-315.900.
Heltzel, James. Safety system for disabling a firearm. 4,563,827, Cl. 42-70.00R.
Henderson, Norman L.: *See*—
Urban, Joseph J.; and Henderson, Norman L., 4,564,129, Cl. 222-207.000.
Henderson, Timothy M., to KMS Fusion, Inc. Glass-surface microcarrier for anchorage-dependent cell cultivation. 4,564,532, Cl. 427-2.000.
Hendrickson, Vergil P.: *See*—
Shookman, Dennis R.; and Hendrickson, Vergil P., 4,564,205, Cl. 280-166.000.
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Altenschopfer, Theodor; Giesen, Walter; Schumann, Klaus; and Streschnak, Benno, 4,564,535, Cl. 427-285.000.
Henning, Timothy P.; and Topa, Robert D., to International Business Machines Corporation. Process for the deposition of palladium-nickel alloy. 4,564,426, Cl. 204-44.600.
Henriksson, Stig R., to Atlas Copco Aktiebolag. Pressure fluid operated percussive tool. 4,563,938, Cl. 91-25.000.
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Werdecker, Waltraud; and Fabian, Peter, 4,564,433, Cl. 204-254.000.
Herbert, James F., to Metal Closures Limited. Bottle closure. 4,564,117, Cl. 215-329.000.
Hergt, Peter; Nicklas, Alexander; and Becker, Karl-Heinz, to Klein, Schanzlin & Becker Aktiengesellschaft. Guide wheel for multistage centrifugal pumps. 4,564,334, Cl. 415-199.300.
Herman, David E.: *See*—
Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., 4,564,369, Cl. 44-2.000.
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Ecsery, Zoltan; Somfai, Eva; Hermann nee Voros, Judit; Nagy, Lajos; Szabo, Gabor; Orban, Otto; and Arvai, Laslzo, 4,564,706, Cl. 564-376.000.
Hermann Wangner GmbH & Co. KG: *See*—
Borel, Georg, 4,564,052, Cl. 139-425.00A.
Hermes Precisa International S.A.: *See*—
Costa, Jorge; and Reichel, Wolfgang, 4,564,187, Cl. 271-9.000.
Herriage, A. A. Apparatus for storing and transporting wire on reels and for dispensing wire from the reels. 4,564,152, Cl. 242-86.500.
Hess, Stanley R., to Cordis Corporation. Retention skirt for pacing electrode assembly. 4,564,023, Cl. 128-785.000.
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Karrer, Henry E., 4,563,894, Cl. 73-24.000.
Heyer, Robert E.; and Tannenbaum, Michael A., to E. R. Squibb & Sons, Inc. Adjustable slide tray. 4,564,118, Cl. 220-8.000.
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Del Rosso, Victor, 4,564,077, Cl. 177-145.000.
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Lancaster, Eldon R.; Guest, Manual T.; and Bessire, Robert W., 4,564,732, Cl. 200-307.000.
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Higashi, Haruki; Waki, Kouichirou; Fukuiri, Masaru; and Yukitomo, Kazuo, to Mazda Motor Corporation. Two stage kickdown control system for a motor vehicle automatic transmission. 4,563,917, Cl. 74-866.000.
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Ballough, Douglas M.; and Higginbotham, Howard L., 4,564,914, Cl. 364-475.000.
Hill, Geoffrey E.; and Woffinden, Duard S., to Hill, Geoffrey E. Automatic balloon launching system. 4,564,159, Cl. 244-98.000.
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Leibhard, Erich, 4,564,324, Cl. 411-3.000.
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Niwa, Toshio; Himeno, Kiyoshi; and Maeda, Shuichi, 4,564,673, Cl. 534-794.000.
Himmelstein, Sydney, to S. Himmelstein and Company. Shaft torquemeter. 4,563,905, Cl. 73-862.360.
Hinuma, Shuji: *See*—
Tsukamoto, Kyozo; Hinuma, Shuji; and Onda, Haruo, 4,564,593, Cl. 435-91.000.
Hinzmann, Alfred; Preisner, Peter M.; and Shu, Timour T., to Hauni-Werke Korber & Co. KG. Method and apparatus for assembling plain cigarettes with filter rod. 4,564,029, Cl. 131-94.000.
Hirai, Kentario; Ishiba, Teruyuki; Matsutani, Shigeru; Makino, Itsuo; Fujishita, Toshio; Doteuchi, Masami; and Otani, Koichi, to Shionogi & Co., Ltd. Aminoalkylbenzene derivatives. 4,564,623, Cl. 514-408.000.
Hirai, Tadaaki: *See*—
Ishioka, Sachio; Imamura, Yoshinori; Hirai, Tadaaki; Nobutoki, Saburo; and Maruyama, Akio, 4,564,784, Cl. 313-384.000.
Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, to Hitachi, Ltd.; and Kanto Chemical Co., Inc. Colorless liquid crystalline compounds. 4,564,694, Cl. 560-1.000.
Hirano, Hideo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method for starting the operation of a loom. 4,564,050, Cl. 139-97.000.
Hiraoka, Masakatsu; Tsumura, Kazushi; Baba, Kenji; Nogita, Shunsuke; and Mori, Shunji, to Hitachi, Ltd. Filamentous microorganism detector and an apparatus with the detector for controlling the process using microorganisms. 4,564,444, Cl. 210-96.100.
Hirose, Syunichi, to Kabushiki Kaisha Toshiba. Phase detecting apparatus. 4,564,819, Cl. 331-2.000.
Hirst, Ian J., to International Standard Electric Corporation. Supervision of digital transmission systems. 4,564,933, Cl. 370-15.000.
Hishinuma, Kazuhiro; and Ohga, Akihiro, to Fuji Photo Film Co., Ltd. Subtraction processing method and apparatus for radiation images. 4,564,861, Cl. 358-111.000.
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Nishigaki, Hisashi; and Aimono, Yuji, 4,564,646, Cl. 522-13.000.
Hitachi, Ltd.: *See*—
Harada, Kunio; Yamaguchi, Sumio; Kanda, Hiroshi; Ishikawa, Isao; and Ohji, Yuzuru, 4,563,900, Cl. 73-644.000.
Hatazawa, Kikuo, 4,564,302, Cl. 400-76.000.
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Honda, Takashi; Minato, Akira; Izumiya, Masakiyo; Kashimura, Eizi; and Ohsumi, Katsumi, 4,564,499, Cl. 376-305.000.
Horiuchi, Michimasa, 4,564,942, Cl. 371-20.000.
Ishikawa, Toshio; Endo, Fumihiro; Yamagiwa, Tokio; and Kamata, Yuzuru, 4,564,721, Cl. 174-10.000.
Ishioka, Sachio; Imamura, Yoshinori; Hirai, Tadaaki; Nobutoki, Saburo; and Maruyama, Akio, 4,564,784, Cl. 313-384.000.
Kanda, Hiroshi; Katakura, Kageyoshi; and Ishikawa, Isao, 4,563,898, Cl. 73-606.000.
Kojima, Tosaku; Matsumoto, Kunio; and Suzuki, Yoshihisa, 4,564,261, Cl. 350-96.240.
Kunugi, Yoshifumi; Sugimoto, Shigeo; Minakawa, Kisaburo; and Machizawa, Kenzi, 4,563,882, Cl. 62-476.000.
Masuda, Mitsuhiro; Naito, Shotaro; Tokuyama, Keiichi; and Watanabe, Shizuhisa, 4,564,905, Cl. 364-424.000.
Mori, Kinji; Suzuki, Yasuo; Orimo, Masayuki; Miyamoto, Shoji; and Ihara, Hirokazu, 4,564,102, Cl. 198-341.000.
Morishita, Hajime; Miura, Kiyoshi; Sasaya, Osamu; and Nonogaki, Saburo, 4,564,572, Cl. 430-28.000.
Mouri, Yasunori; and Abe, Osamu, 4,564,907, Cl. 364-431.100.
Okikawa, Susumu, 4,564,734, Cl. 219-56.220.
Onishi, Yoshiaki, deceased; Onishi, Junko, administratrix; Kawamoto, Hiroshi; and Yasui, Tokumasa, 4,564,925, Cl. 365-203.000.
Oshida, Yoshitada; Makihara, Hiroshi; and Aoki, Nobuhiko, 4,564,296, Cl. 356-381.000.
Saitoh, Takeshi; and Hatashita, Hiroshi, 4,564,822, Cl. 331-117.00R.
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Senoo, Masaharu; Noma, Keizi; Saruta, Akira; Yoshizaki, Masanori; Teshirogi, Koichi; and Yaegashi, Kouei, 4,564,777, Cl. 310-156.000.
Shimada, Tamotsu; Shinbo, Chiaki; Horiuchi, Hideyuki; and Takatsuji, Masamoto, 4,564,012, Cl. 128-303.100.
Tashiro, Korefumi; and Akiyama, Hiroyuki, 4,564,774, Cl. 307-479.000.
Tatsuno, Kimio; and Arimoto, Akira, 4,564,268, Cl. 350-409.000.
Tomite, Tosio; Ogasawara, Nobuhiko; Isii, Kaniti; and Kanamaru, Hisanobu, 4,564,776, Cl. 310-70.00R.
Yamauchi, Teruo; and Oyama, Yoshishige, 4,563,993, Cl. 123-478.000.
Yonezawa, Seiji; Horikoshi, Tatsuo; Tsuyoshi, Toshiaki; and Takasugi, Wasao, 4,564,929, Cl. 369-44.000.

Ho, Chih Y., to McNeilab, Inc. Aryl fatty acid leukotriene synthesis inhibitors. 4,564,476, Cl. 260-404.000.

Hochberg, Arie; and Mason, Charles D., to Allied Corporation. Flame retardant amine terminated polyamide composition. 4,564,650, Cl. 524-288.000.

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Bieringer, Hermann; Burstell, Helmut; Handte, Reinhard; Kocher, Helmut; and Schulze, Ernst-Friedrich, 4,564,381, Cl. 71-88.000.
Ehrl, Winfried; Reng, Alwin; and Quack, Jochen M., 4,564,520, Cl. 424-70.000.
Kuckertz, Herbert; and Schaeffer, Georg, 4,564,712, Cl. 568-635.000.
Liebl, Rainer; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; and Bieringer, Hermann, 4,564,382, Cl. 71-88.000.
Muschaweck, Roman; Fulberth, Werner; and Sickmuller, Alfred, 4,564,625, Cl. 514-429.000.
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Urban, Joseph J.; and Henderson, Norman L., 4,564,129, Cl. 222-207.000.

Hoffelner, Volkwin. Device for cutting through automobile belts with a knife. 4,563,815, Cl. 30-296.00A.

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Zimmer, Herbert; Dathe, Ingo; Hoffmann, Reinhard; Hora, Petr; and Wortmann, Franz X., 4,564,337, Cl. 416-223.00R.

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Schoen, Josef; and Hoffmann, Rudolf, 4,564,417, Cl. 156-633.000.

Hofmann, Hans-Joachim, to Durr-Dental GmbH & Co. KG. Device for incorporation in dental suction apparatuses for separation of liquid and solid components. 4,564,374, Cl. 55-57.000.

Hofmann, Hans P.: *See*—
Seitz, Werner; Teschendorf, Hans-Jurgen; Michel, Alfred; Traut, Martin; Hofmann, Hans P.; and Kreiskott, Horst, 4,564,641, Cl. 514-650.000.

Hofmann, Wilfried; Lusch, Herbert; Rauffer, Walter; Zieran, Eberhard; and Sylla, Jurgen, to Agfa-Gevaert Aktiengesellschaft. Microfilm sensing device with a projection lamp and cold-light mirror. 4,564,276, Cl. 353-55.000.

Hogan, Robert J.: *See*—
Kukes, Simon G.; Sughrue, Edward L., II; and Hogan, Robert J., 4,564,441, Cl. 208-108.000.

Hogan, Stephen J., to United States of America, Energy. Pure silver ohmic contacts to N- and P- type gallium arsenide materials. 4,564,720, Cl. 136-256.000.

Hokazono, Akio; and Sugimoto, Tatsuyoshi, to Nihon Nohyaku Co., Ltd. Feed composition. 4,564,627, Cl. 514-430.000.

Holl, Roland: *See*—
Mathes, Josef; and Holl, Roland, 4,563,951, Cl. 101-216.000.

Holland, Paul E.: *See*—
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Hollenstein, Helmut: *See*—
Rock, Erich; and Hollenstein, Helmut, 4,564,306, Cl. 403-14.000.

Hollingsworth, Ashley J. Articulated support arm apparatus. 4,564,179, Cl. 269-71.000.

Holly, Kenneth; and Smith, Gehrard J., to Elxsi. I/O Channel bus. 4,564,899, Cl. 364-200.000.

Holmes, George; and Keyser, Frank, to Vigil, Thomas R. Plastic extruder assembly. 4,564,350, Cl. 425-313.000.

Holmwood, Graham: *See*—
Streissle, Gert; Plempel, Manfred; Paessens, Arnold; Holmwood, Graham; and Buchel, Karl H., 4,564,622, Cl. 514-383.000.

Holter, Karl: *See*—
Schrewe, Hans; Pleschiutschnigg, Fritz-Peter; van Bonn, Hans; Holter, Karl; and Wiegard, Gustav, 4,564,058, Cl. 164-72.000.

Holz, Joachim; Meier, Wolfgang; Ogorek, Kurt; Goris, Heinrich; and Schwarting, Karl H., to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Power supply arrangement for pulled mining machines. 4,564,241, Cl. 299-43.000.

Holzer, Joseph C., to Gaylord Bros., Inc. Apparatus for producing labels. 4,564,411, Cl. 156-387.000.

Holzer, Walter: *See*—
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Homan, Gary R., to Dow Corning Corporation. Method of treating water to inhibit corrosion and diminish mineral deposition. 4,564,456, Cl. 210-698.000.

Homma, Kazumoto; and Watanabe, Masaharu, to Toshiba Ceramics Co., Ltd.; and Tokyo Shibaura Denki Kabushiki Kaisha. Method for producing a semiconductor device. 4,564,416, Cl. 156-617.0SP.

Honda Giken Kogyo Kabushiki: *See*—
Tahata, Michio; Okamoto, Masao; and Enomoto, Hiroshi, 4,564,482, Cl. 261-44.00B.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Eiji, Kishida; Hideo, Kobayashi; and Hidekazu, Kano, 4,563,990, Cl. 123-438.000.
Fujimori, Yoshitsugu; Adachi, Ryouhei; Ebisawa, Hiroo; Kurachi, Yukio; and Koike, Masami, 4,564,232, Cl. 296-146.000.
Hamane, Masumi; Onda, Takanori; and Baba, Masayoshi, 4,564,081, Cl. 180-229.000.

Honda, Takashi; Minato, Akira; Izumiya, Masakiyo; Kashimura, Eizi; and Ohsumi, Katsumi, to Hitachi, Ltd. Method of inhibiting corrosion of carbon steel piping of condensate and feed water systems in power generating plant. 4,564,499, Cl. 376-305.000.

Honeywell Inc.: *See*—
Nohava, Thomas E.; and Schmit, Joseph L., 4,564,494, Cl. 264-275.000.

Hora, Petr: *See*—
Zimmer, Herbert; Dathe, Ingo; Hoffmann, Reinhard; Hora, Petr; and Wortmann, Franz X., 4,564,337, Cl. 416-223.00R.

Hori, Shinichi; Ohnishi, Yasuichi; Ueda, Masahiro; and Noba, Masahiko, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Diagnosing speed sensor defect of an automotive vehicle electronic control system. 4,564,916, Cl. 364-551.000.

Horii, Kenju: *See*—
Kuroda, Takao; and Horii, Kenju, 4,564,766, Cl. 250-578.000.

Horikawa, Kazuo: *See*—
Noguchi, Masaru; Horikawa, Kazuo; and Ohga, Akihiro, 4,564,760, Cl. 250-327.200.

Horikoshi, Tatsuo: *See*—
Yonezawa, Seiji; Horikoshi, Tatsuo; Tsuyoshi, Toshiaki; and Takasugi, Wasao, 4,564,929, Cl. 369-44.000.

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Horiuchi, Hideyuki: *See*—
Shimada, Tamotsu; Shinbo, Chiaki; Horiuchi, Hideyuki; and Takatsuji, Masamoto, 4,564,012, Cl. 128-303.100.

Horiuchi, Michimasa, to Hitachi, Ltd. Trouble shooting system for electric vehicle. 4,564,942, Cl. 371-20.000.

Hormann KG: *See*—
Hormann, Michael, 4,564,098, Cl. 192-150.000.

Hormann, Michael, to Hormann KG. Drive assembly for door operator. 4,564,098, Cl. 192-150.000.

Horn, Alan S., to Nelson Research & Development Co. Substituted 2-aminotetralins. 4,564,628, Cl. 514-438.000.

Horn, Gerhardt: *See*—
Bussemeier, Bernd; Frohning, Carl D.; Horn, Gerhardt; and Kluy, Werner, 4,564,642, Cl. 518-717.000.

Hornberger, Dennis A., to Sermatech International Incorporated. Coated part, coating therefor and method of forming same. 4,564,555, Cl. 428-312.800.

Hortico Limited: *See*—
Thompson, Edward, 4,563,980, Cl. 119-1.000.

Hoshi, Hironobu: *See*—
Ohgushi, Masuhito; Ohtsuka, Hiroshi; Asaba, Tsutomu; Hoshi, Hironobu; Goshokubo, Kenichi; Wakui, Takeo; Ishii, Kiminori; Ohno, Masashi; and Okada, Yukio, 4,564,557, Cl. 428-333.000.

Hosoi, Atsushi: *See*—
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Houssian, Vazgen; and Dowzall, Martin E., to Esselte Pendaflex Corporation. Magnetic devices, apparatus for use in connection with dry transfer sheets incorporating such devices and sheets for use therein. 4,564,414, Cl. 156-541.000.

Hovey, Frederick A.: *See*—
Baum, Steven A.; Gallaro, Anthony V.; Hovey, Frederick A.; Rehkopf, Charles H.; and Sember, William J., 4,564,786, Cl. 313-479.000.

Howald, Werner E. Combustion apparatus including an air-fuel premixing chamber. 4,563,875, Cl. 60-39.230.

Hsieh, Der-Chang: *See*—
LaBudde, Edward V.; Niven, Jeffrey E.; Hsieh, Der-Chang; Parker, Roger C.; and Johnson, Robert Jeffery, 4,564,757, Cl. 250-239.000.

Hsieh, Yung-Ao: *See*—
Seltzman, Herbert H.; and Hsieh, Yung-Ao, 4,564,528, Cl. 426-548.000.

Hsu, Chao-Yang; and Ellis, Paul E., Jr., to Sun Refining And Marketing Company. Hydroformylation catalyst and process. 4,564,711, Cl. 568-454.000.

Hubbard, James R.: *See*—
Pelensky, Joseph; Hubbard, James R.; and Scanlon, John J., 4,564,852, Cl. 346-140.00R.

Hubele, Adolf: *See*—
Kunz, Walter; Eckhardt, Wolfgang; and Hubele, Adolf, 4,564,629, Cl. 514-472.000.

Huber, Robert: *See*—
Weddigen, Gerd; Huber, Robert; Schmidt, Birgit; and Schneider, Hartmut, 4,564,466, Cl. 525-505.000.

Hudson, Albert B.: *See*—
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Hug, Kuno: *See*—
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Hugelshofer, Alison, to Nestec S. A. Process for the production of soya jelly and product resulting therefrom. 4,564,530, Cl. 426-575.000.

Hughes Helicopters, Inc.: *See*—
Cleary, Michael M.; and Bohorquez, Luis A., 4,563,936, Cl. 89-11.000.
Sampatacos, Evan P., 4,564,336, Cl. 416-141.000.

Hughes, John T., to Micropore International Limited. Handleable shapes of thermal insulation material. 4,564,547, Cl. 428-117.000.

Huin, Roland: *See*—
Layotte, Pierre-Claude; Cholet, Jacques; Grolet, Pierre; and Huin, Roland, 4,564,083, Cl. 181-114.000.

Hume, Robert M., III; LaBrash, Robert A.; and Vander Giessen, Michael J., to H. B. Fuller Company. Polyvinyl alcohol and lignin sulfonate containing adhesive. 4,564,649, Cl. 524-13.000.

Humphrey, John R., to International Packaging Machines, Inc. Automatic stretch wrapping machine. 4,563,863, Cl. 53-556.000.
Hunold, Klaus: *See—*
Kriegesmann, Jochen; Hunold, Klaus; Lipp, Alfred; Reinmuth, Klaus; and Schwetz, Karl A., 4,564,601, Cl. 501-88.000.
Hunziker, Kenneth J. Face panel system. 4,564,316, Cl. 405-262.000.
Huppert, James C., to Minnesota Mining and Manufacturing Company. Flap wheel. 4,563,839, Cl. 51-334.000.
Huschelrath, Gerhard; Abend, Klaus; and Orthen, Ursula, to Nukem GmbH. Eddy current test method with degree of amplification selected in accordance with a compensation signal. 4,564,809, Cl. 324-225.000.
Husqvarna Aktiebolag: *See—*
Sjodin, Gunnar O. M., 4,563,964, Cl. 112-275.000.
Hutchison, Stephen; Ritter, J. Alan; and Virkus, Mark, to Storz Instrument Company. Ultrasonic system for obtaining ocular measurements. 4,564,018, Cl. 128-660.000.
Huth, Andreas: *See—*
Rahtz, Dieter; Huth, Andreas; Schmiechen, Ralph; Seidelmann, Dieter; Kehr, Wolfgang; Schneider, Herbert H.; and Braestrup, Claus T., 4,564,610, Cl. 514-80.000.
Huybrechts, Jozef T.; and Vleminckx, Victor R., to Du Pont de Nemours, E. I., and Company. Epoxy graft acrylic water-based primer surfaces. 4,564,648, Cl. 523-423.000.
Hwang, Yong Y., to Stein Associates, Inc. Heat shield-steam distributor for cooking oven. 4,563,945, Cl. 99-443.00C.
Hydrasearch Co., Inc.: *See—*
Loker, Ernest B.; and Turner, Donald H., 4,564,222, Cl. 285-243.000.
Hydro-Quebec: *See—*
Simoneau, Raynald; and Chincholle, Lucien, 4,564,422, Cl. 204-1.00T.
Hyway Concrete Pipe Company: *See—*
Niswander, Robert L.; and Cornwell, Tomy W., 4,564,313, Cl. 405-125.000.
Iba, Youich; and Inaba, Kouji, to Olympus Optical Co., Ltd. Retinal camera. 4,564,273, Cl. 351-209.000.
Ibata, Kazuo, to Nitsuko Limited. Pulse/direct current transmitting circuit in a key telephone system. 4,564,726, Cl. 179-99.00M.
Ibata, Koichi: *See—*
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Ichimura, Kunihiro; Yamaoka, Tsuguo; Kaneda, Sadayoshi; and Shibuya, Toru, to Kogyo Gijutsuin; and Murakami Screen Kabushiki Kaisha. Photosensitive resin composition. 4,564,580, Cl. 430-281.000.
Ide, Katsuyuki; Yamada, Masatoshi; and Sasaki, Katsusuke, to Star Farm Machinery Mfg. Co., Ltd. Plow or harrow. 4,564,073, Cl. 172-120.000.
Idemitsu Kosan Company Limited: *See—*
Hayashi, Hiroshi; Matono, Koichi; Asahi, Satoshi; and Uoi, Michitake, 4,564,647, Cl. 523-211.000.
Ihara, Hirokazu: *See—*
Mori, Kinji; Suzuki, Yasuo; Orimo, Masayuki; Miyamoto, Shoji; and Ihara, Hirokazu, 4,564,102, Cl. 198-341.000.
Ihara, Kazunori, to Toyo Kogyo Co., Ltd. Method of producing monolith catalysts. 4,564,608, Cl. 502-355.000.
Ihara, Ryuji, to Victor Company of Japan, Ltd. Cassette loading device in a cassette tape recorder. 4,564,875, Cl. 360-96.600.
Iida, Kozo; and Obayashi, Yoshiaki, to Mitsubishi Jukogyo Kabushiki Kaisha. Catalyst for treating waste gases. 4,564,604, Cl. 502-64.000.
Ikeda Bussan Co., Ltd.: *See—*
Akimoto, Hisayoshi, 4,564,239, Cl. 297-452.000.
Ikeda, Hiroki: *See—*
Matsushita, Ken; Ikeda, Hiroki; and Sugiyama, Yoshihide, 4,563,947, Cl. 101-122.000.
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Yamada, Motokazu; Hayakawa, Hideyuki; Fukui, Tomonori; Matsuhashi, Hajime; Kaneko, Yasuhiro; Ikeda, Motozo; and Nagata, Tomihiko, 4,564,917, Cl. 364-565.000.
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Arakawa, Tatsumi; Ozaki, Masaru; and Ikeda, Yukihiro, 4,564,668, Cl. 528-388.000.
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DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,564,474, Cl. 260-397.200.
Ikezi, Hiroyuki; and Freeman, Richard L., to GA Technologies Inc. Method of judging carrier lifetime in semiconductor devices. 4,564,807, Cl. 324-158.00D.
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Ilg, Rudolf, to Zahnradfabrik Friedrichshafen, AG. High pressure pump with a flow control valve. 4,564,338, Cl. 417-310.000.
Iljukhin, Vitaly G.: *See—*
Alexandrov, Adolf M.; Tsimbler, Jury A.; Iljukhin, Vitaly G.; Yashin, Jury A.; and Kiselev, Igor V., 4,564,318, Cl. 406-192.000.
Illenberg, Cornelius J.; Dinger, Ronald W.; Kunde, David A.; and Lucarelli, Anthony V., to General Signal Corp. Railway signaling relay. 4,564,829, Cl. 335-135.000.
Imamura, Saburo: *See—*
Morita, Masao; Tanaka, Akinobu; Imamura, Saburo; Tamamura, Toshiaki; and Kogure, Osamu, 4,564,579, Cl. 430-270.000.
Imamura, Yoshinori: *See—*
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Imanari, Makoto; Iwane, Hiroshi; and Sugawara, Takahiro, to Mitsubishi Petrochemical Co., Ltd. Process for producing 4,4'-dihydroxydiphenyls. 4,564,713, Cl. 568-730.000.
Imanishi, Masami: *See—*
Hama, Hiroaki; Imanishi, Masami; and Tanaka, Naoki, 4,563,879, Cl. 62-160.000.
Imbert, Jean P., to La Bellignite. Covers with a tearable tamper-proof band. 4,564,115, Cl. 215-256.000.
IMS S.p.A.: *See—*
Barzano', Piero, 4,564,149, Cl. 242-58.100.
Imura, Shinichi: *See—*
Kokubo, Eiichi; Arikawa, Junichi; Goi, Kowichi; and Imura, Shinichi, 4,564,140, Cl. 232-57.500.
Inaba, Kouji: *See—*
Iba, Youich; and Inaba, Kouji, 4,564,273, Cl. 351-209.000.
Inaba, Tsutomu: *See—*
Nakamura, Toshiyuki; Inaba, Tsutomu; and Kimura, Tadashi, 4,564,339, Cl. 417-366.000.
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Index-Werke Konn.-Ges. Hahn & Tessky: *See—*
Link, Helmut F., 4,563,925, Cl. 82-28.00R.
Industries Development Corporation (International Services): *See—*
Miller, Moshe, 4,563,914, Cl. 74-687.000.
Industriewerk Nachf. Seifert & Co. KG: *See—*
Burkert, Joachim, 4,564,231, Cl. 294-96.000.
Infusionstechnik Clinico GmbH & Co.: *See—*
Heinzerling, Walter C., 4,564,171, Cl. 251-209.000.
Ingersoll, Thomas S. High torque output, collapsible and light weight wrench. 4,563,920, Cl. 81-177.800.
Inmont Corporation: *See—*
Thiebaut, Bernard A., 4,563,952, Cl. 101-451.000.
Innopac Inc.: *See—*
Smith, Lewis W.; and Warburton, Eric T., 4,563,855, Cl. 53-128.000.
Inoue-Japax Research Incorporated: *See—*
Miyano, Kazuyoshi, 4,564,431, Cl. 204-224.00M.
Inoue, Kazuo, to Nippon Mektron, Ltd. Membrane keyboard having key closure retention. 4,564,832, Cl. 340-365.00R.
Inoue, Michiya: *See—*
Komiya, Hidetsugu; and Inoue, Michiya, 4,564,768, Cl. 307-140.000.
Institut Francais du Petrole: *See—*
Layotte, Pierre-Claude; Cholet, Jacques; Grolet, Pierre; and Huin, Roland, 4,564,083, Cl. 181-114.000.
International Business Machines: *See—*
Collins, John C.; and DeFazio, John J., 4,564,943, Cl. 371-28.000.
International Business Machines Corporation: *See—*
Arnold, Richard F.; Cocke, John; Coppersmith, Don; Seigler, Adrian E.; and Strait, Gary E., 4,564,944, Cl. 371-37.000.
Fredericks, Edward C.; and Kotecha, Harish N., 4,564,584, Cl. 430-312.000.
Guyette, Richard R.; Hall, Eddie T.; Meritt, Allan S.; Newson, Stephen R.; Scalzi, Casper A.; and Sears, Glenn W., Jr., 4,564,903, Cl. 364-300.000.
Henning, Timothy P.; and Topa, Robert D., 4,564,426, Cl. 204-44.600.
Johnson, Mark, 4,564,756, Cl. 250-231.0SE.
Kilen, Richard S.; and Rittenhouse, Larry E., 4,564,794, Cl. 318-314.000.
Maley, Gerald A.; and Westcott, Douglas W., 4,564,772, Cl. 307-443.000.
Perreault, Stanley E.; and Wood, Robert L., 4,564,575, Cl. 430-165.000.
International Packaging Machines, Inc.: *See—*
Humphrey, John R., 4,563,863, Cl. 53-556.000.
International Standard Electric Corporation: *See—*
Bienstman, Luc A., 4,564,879, Cl. 361-98.000.
Hansen, Bjorn N., 4,564,939, Cl. 370-85.000.
Hirst, Ian J., 4,564,933, Cl. 370-15.000.
International Telephone & Telegraph Corp.: *See—*
Singh, Gurnam, 4,563,901, Cl. 73-706.000.
Intersonics Incorporated: *See—*
Danley, Thomas J.; and Rey, Charles A., 4,564,727, Cl. 179-116.000.
Intersteel Technology, Inc.: *See—*
Vallomy, John A., 4,564,388, Cl. 75-12.000.
Inui, Yoshiaki: *See—*
Sato, Tadashi; Takahashi, Genji; and Inui, Yoshiaki, 4,564,754, Cl. 250-225.000.
Inukai, Hiroshi: *See—*
Ohmori, Akira; Tomihashi, Nobuyuki; Inukai, Hiroshi; and Shimizu, Yoshiki, 4,564,717, Cl. 568-843.000.
Inventio AG: *See—*
Haas, Max, 4,564,087, Cl. 187-56.000.
Iowa Mold Tooling Company, Inc.: *See—*
Zrostlik, Francis L., 4,564,057, Cl. 157-1.000.
Irbit Research & Consulting A.G.: *See—*
Tschudin-Mahrer, Rolf, 4,564,550, Cl. 428-159.000.
Ishiba, Teruyuki: *See—*
Hirai, Kentario; Ishiba, Teruyuki; Matsutani, Shigeru; Makino, Itsuo; Fujishita, Toshio; Doteuchi, Masami; and Otani, Koichi, 4,564,623, Cl. 514-408.000.
Ishibashi, Takao: *See—*
Akatsuka, Takao; Nakano, Jiro; Ishibashi, Takao; and Kawaguchi, Masao, 4,563,991, Cl. 123-440.000.

Ishii, Hidesaburo, to Chiyoda Tsusho K.K. Hose coupling. 4,564,221, Cl. 285-239.000.

Ishii, Kiminori: *See—*
Ohgushi, Masuhito; Ohtsuka, Hiroshi; Asaba, Tsutomu; Hoshi, Hironobu; Goshokubo, Kenichi; Wakui, Takeo; Ishii, Kiminori; Ohno, Masashi; and Okada, Yukio, 4,564,557, Cl. 428-333.000.

Ishikawa, Isao: *See—*
Harada, Kunio; Yamaguchi, Sumio; Kanda, Hiroshi; Ishikawa, Isao; and Ohji, Yuzuru, 4,563,900, Cl. 73-644.000.
Kanda, Hiroshi; Katakura, Kageyoshi; and Ishikawa, Isao, 4,563,898, Cl. 73-606.000.

Ishikawa, Mamoru: *See—*
Ohno, Kiyotaka; Nagase, Hiroshi; Ishikawa, Mamoru; Matsumoto, Kazuhisa; and Nishio, Shintaro, 4,564,620, Cl. 514-337.000.

Ishikawa, Toshio; Endo, Fumihiro; Yamagiwa, Tokio; and Kamata, Yuzuru, to Hitachi, Ltd. Gas-insulated electrical apparatus with electret for captivating conductive particles and method of removing such particles during assembly thereof. 4,564,721, Cl. 174-10.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Morishige, Norio; and Kume, Ryoichi, 4,564,402, Cl. 148-127.000.

Ishima, Kazumi, to Ricoh Company, Ltd. Heater drive circuit for controlling ink temperature in ink jet printer. 4,564,749, Cl. 219-497.000.

Ishioka, Sachio; Imamura, Yoshinori; Hirai, Tadaaki; Nobutoki, Saburo; and Maruyama, Akio, to Hitachi, Ltd. Reduced degradation, high resolution image pickup tube. 4,564,784, Cl. 313-384.000.

Isii, Kaniti: *See—*
Tomite, Tosio; Ogasawara, Nobuhiko; Isii, Kaniti; and Kanamaru, Hisanobu, 4,564,776, Cl. 310-70.00R.

Isohata, Junji, to Canon Kabushiki Kaisha. Aligning system. 4,563,820, Cl. 33-180.00R.

Ito, Eiichi, to TRW Ehrenreich GmbH & Co. K.G. Ball joint. 4,564,307, Cl. 403-140.000.

Ito, Katsumi: *See—*
Sugihara, Hirosada; Nishikawa, Kohei; and Ito, Katsumi, 4,564,612, Cl. 514-211.000.

Ito, Kenji: *See—*
Watanabe, Yoshikazu; and Ito, Kenji, 4,564,587, Cl. 430-505.000.

Ito, Yoshiyasu: *See—*
Kobayashi, Fumiaki; and Ito, Yoshiyasu, 4,563,992, Cl. 123-458.000.

Itoh, Yoji: *See—*
Hayashi, Yoshimasa; and Itoh, Yoji, 4,563,983, Cl. 123-41.210.

ITT Corporation: *See—*
Hansen, William D.; and Mix, Raymond F., 4,564,251, Cl. 339-17.0CF.

ITT Industries, Inc.: *See—*
Reinartz, Hans-Dieter; and Steffes, Helmut, 4,564,244, Cl. 303-6.00C.

Iwabuchi, Yoshitaka: *See—*
Takahashi, Toshinori; Tsumiyama, Hisanori; Okano, Keigo; and Iwabuchi, Yoshitaka, 4,564,876, Cl. 360-107.000.

Iwaki, Yoshiyuki; Matsumoto, Akio; and Yokota, Mitsuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Two-battery power supply system for vehicles. 4,564,799, Cl. 320-6.000.

Iwamoto, Hidenori: *See—*
Tamura, Toshinari; Iwamoto, Hidenori; Yoshida, Makoto; and Yamamoto, Minoru, 4,564,609, Cl. 514-18.000.

Iwane, Hiroshi: *See—*
Imanari, Makoto; Iwane, Hiroshi; and Sugawara, Takahiro, 4,564,713, Cl. 568-730.000.

Iwanicki, Walter; and Duane, Brian, to Commonwealth of Australia, The. Solar/gas heater. 4,564,003, Cl. 126-427.000.

Iwase, Kazuhiko: *See—*
Oda, Yasuyuki; and Iwase, Kazuhiko, 4,564,872, Cl. 360-78.000.

Izawa, Takahal: *See—*
Nonoue, Torahiko; Moriki, Etsuzo; Miyazaki, Yoshifumi; Izawa, Takahal; Kikkawa, Shinichi; and Shiraki, Kenhachi, 4,564,288, Cl. 355-57.000.

Izumiya, Masakiyo: *See—*
Honda, Takashi; Minato, Akira; Izumiya, Masakiyo; Kashimura, Eizi; and Ohsumi, Katsumi, 4,564,499, Cl. 376-305.000.

J & D Oram Limited: *See—*
Oram, John A., 4,564,892, Cl. 362-297.000.

J. Hengstler K.G.: *See—*
Trittler, Karl, 4,564,043, Cl. 137-624.180.

J. N. Eltzroth & Associates Inc.: *See—*
Opsahl, Ross C., 4,564,397, Cl. 148-6.15R.

Jager, Heinz. Operating procedure and sifter for the sifting of cement. 4,564,442, Cl. 209-148.000.

Jagger, Vivienne D., to Little People Limited. Cutlery. 4,563,816, Cl. 30-343.000.

Jahn, Christopher A.: *See—*
Cairo, John A., Jr.; and Jahn, Christopher A., 4,564,457, Cl. 210-704.000.

Jakobs, Hasko: *See—*
Kant, Bernhard; and Jakobs, Hasko, 4,564,881, Cl. 361-284.000.

Jakobsen, Kjell M.: *See—*
Nilsson, Torsten; and Jakobsen, Kjell M., 4,564,495, Cl. 264-291.000.

James, David R., to James Industries Limited. Bath installations and bath tubs. 4,563,781, Cl. 4-542.000.

James Industries Limited: *See—*
James, David R., 4,563,781, Cl. 4-542.000.

Jamieson, Donald R.: *See—*
Adams, Johnnie E.; and Jamieson, Donald R., 4,564,683, Cl. 548-521.000.

Janoff, Andrew S.; Ostro, Marc J.; Weiner, Allan L.; Weissmann, Gerald; and Seibold, James R., to Lipodome Company, Inc., The. Liposome composition for lupus assay. 4,564,599, Cl. 436-507.000.

Janome Sewing Machine Co., Ltd.: *See—*
Hanyu, Susumu, 4,563,963, Cl. 112-266.100.
Sano, Yasuro, 4,563,966, Cl. 112-455.000.

Janousek, Bruce K.; and Carscallen, Richard C., to Aerospace Corporation, The. Electrochemical etching of a mercury-cadmium-telluride substrate. 4,564,425, Cl. 204-34.500.

Janvier, Dominique: *See—*
Barillec, Christian; Janvier, Dominique; and Bonneton, Marc, 4,563,861, Cl. 53-453.000.

Japan Electronic Control Systems Co., Ltd.: *See—*
Kato, Shinichi; Tamura, Takeshi; Ambo, Tsugio; and Shimazawa, Katsuji, 4,564,252, Cl. 339-91.00R.

Japan Steel Works Ltd., The: *See—*
Ohhashi, Tateo; Kawamoto, Hideyuki; and Murakami, Yutaka, 4,564,392, Cl. 75-128.00V.

Japan Synthetic Rubber Co., Ltd.: *See—*
Morita, Hideaki; Kasuya, Takahira; Yamakawa, Goichi; Tomono, Makoto; Furuta, Isao; and Tsuneyoshi, Minoru, 4,564,573, Cl. 430-109.000.

Javor, Andras: *See—*
Toth, Edit; Torley, Jozsef; Hajdu, Istvan; Gorog, Sander; Maderspach, Andrea; Hajos, Gyorgy; Szporny, Laszlo ; and Javor, Andras, 4,564,630, Cl. 514-478.000.

Jeans, Edward L., to Cadbury Schweppes, PLC. Method and apparatus for batch carbonating. 4,564,483, Cl. 261-64.00B.

Jenkins, James H. Assist handle. 4,563,783, Cl. 4-576.000.

Jerlich, Werner J.; Kaiserfeld, Hans; and Kugler, Alfred; to Vereinigte Edelstahlwerke Aktiengesellschaft. Chromium containing alloy for fabricating pressing tools, pressing plates formed from such alloy and method of fabrication thereof. 4,564,566, Cl. 428-687.000.

Jessup, Terry D.; and Hudson, Albert B., to Loew's Theatres, Inc. Cigarette filter assembly. 4,564,030, Cl. 131-336.000.

Jetronic Industries, Inc.: *See—*
Jurjans, Ojars, 4,564,800, Cl. 320-36.000.

Job, Clarence A. Bird house trap. 4,563,835, Cl. 43-69.000.

John Drew (London) Limited: *See—*
Drew, John A., 4,563,787, Cl. 12-142.00N.

Johnsen & Jorgensen (Plastics) Ltd.: *See—*
Burton, George W., 4,564,124, Cl. 221-263.000.

Johnson, Edgar G., Jr.; Cornelison, James J.; and Mackovjak, Paul V., to Micromedic Systems Inc. Direct reading automatic pipette. 4,563,907, Cl. 73-864.160.

Johnson, Mark, to International Business Machines Corporation. Proximity sensor with a light-emitting diode which simultaneously emits and detects light. 4,564,756, Cl. 250-231.0SE.

Johnson, Robert E.: *See—*
Doherty, Charles F.; and Johnson, Robert E., 4,564,762, Cl. 250-381.000.

Johnson, Robert Jeffery: *See—*
LaBudde, Edward V.; Niven, Jeffrey E.; Hsieh, Der-Chang; Parker, Roger C.; and Johnson, Robert Jeffery, 4,564,757, Cl. 250-239.000.

Johnson, William L.; and Schwarz, Ricardo B., to California Institute of Technology. Formation of amorphous materials. 4,564,396, Cl. 148-4.000.

Jones, Marshall G.; and Richardson, Donald C., to General Electric Company. Industrial hand held laser tool and laser system. 4,564,736, Cl. 219-121.00L.

Jones, Terence R.; Harrap, Kenneth R.; and Calvert, Alan H., to National Research Development Corporation. Anti-cancer quinazoline derivatives. 4,564,616, Cl. 514-260.000.

Jones, Timothy R., to Motorola Inc. Transimpedance amplifier having an improved gain/bandwidth product. 4,564,818, Cl. 330-311.000.

Jones, W. Gregory, to Kimberly-Clark Corporation. Easily releasable mat holder. 4,564,546, Cl. 428-81.000.

Jonsson, Gunther: *See—*
Sikander, Ake; Biorkman, Ake; and Jonsson, Gunther, 4,564,174, Cl. 266-149.000.

Jordan, Alfons: *See—*
Krude, Werner; and Jordan, Alfons, 4,564,242, Cl. 301-6.0CF.

Josef Wischerath GmbH & Co., KG: *See—*
Eulenburg, Jurgen, 4,564,130, Cl. 222-207.000.

Julius Blum Gesellschaft m.b.H.: *See—*
Rock, Erich; and Hollenstein, Helmut, 4,564,306, Cl. 403-14.000.

Junge, Bodo: *See—*
Boltze, Karl-Heinz; Davies, Margaret A.; Junge, Bodo; Schuurman, Teunis; and Traber, Jorg, 4,564,613, Cl. 514-222.000.

Junyshev, Viktor K.: *See—*
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.

Jurado, Marcel: *See—*
Cochet, Andre ; Droussent, Roger; and Jurado, Marcel, 4,564,469, Cl. 252-626.000.

Jurjans, Ojars, to Jetronic Industries, Inc. Battery charger. 4,564,800, Cl. 320-36.000.

Kabayama, Yoshiaki, to Kabushiki Kaisha Daikin Seisakusho. Clutch disc. 4,564,097, Cl. 192-106.100.

Kabushiki Kaisha Daikin Seisakusho: *See*—
Kabayama, Yoshiaki, 4,564,097, Cl. 192-106.100.
Kabushiki Kaisha Ishida Koki Seisakusho: *See*—
Sashiki, Takashi; and Sakaeda, Keiko, 4,564,103, Cl. 198-358.000.
Kabushiki Kaisha Miyano Tekkosho: *See*—
Miyazaki, Hiroo; Shirai, Teruo; and Ogawa, Tsutomu, 4,563,910, Cl. 74-820.000.
Kabushiki Kaisha Takuma: *See*—
Fujiwara, Koji, 4,563,959, Cl. 110-281.000.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Kokubu, Sadao, 4,564,789, Cl. 315-79.000.
Kabushiki Kaisha Toshiba: *See*—
Hirose, Syunichi, 4,564,819, Cl. 331-2.000.
Nakamura, Kenichi, 4,563,899, Cl. 73-626.000.
Nakayama, Yasunobu; Sato, Yasuji; and Shibata, Shinichi, 4,564,724, Cl. 179-2.00A.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Hirano, Hideo, 4,564,050, Cl. 139-97.000.
Tooka, Takuzo, 4,563,873, Cl. 57-264.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Hasegawa, Junzo; Kawabata, Susumu; Mimura, Nobuharu; and Kitano, Masao, 4,563,874, Cl. 57-406.000.
Kabushiki Kaisha Tsuji: *See*—
Tsuji, Tadashi, 4,564,539, Cl. 428-33.000.
Kabushiki Kaisha Yamagataya Nori Ten: *See*—
Takashima, Shuji, 4,564,526, Cl. 426-262.000.
Kadowaki, Takashi: *See*—
Sasaki, Masao; Nishijima, Toyoki; Takada, Shun; Kadowaki, Takashi; and Onodera, Kaoru, 4,564,590, Cl. 430-551.000.
Kahny-Maschinenbau GmbH: *See*—
Kahny, Peter; and Gerling, Norbert, 4,564,136, Cl. 228-6.100.
Kahny, Peter; and Gerling, Norbert, to Kahny-Maschinenbau GmbH. Apparatus for the automatic soldering-on of hard metal teeth. 4,564,136, Cl. 228-6.100.
Kaise Denki Kabushiki Kaisha: *See*—
Kaise, Hideo, 4,564,806, Cl. 324-154.0PB.
Kaise, Hideo, to Kaise Denki Kabushiki Kaisha. Taut band instrument having accurate taut band positioning means. 4,564,806, Cl. 324-154.0PB.
Kaiser, Klaus-Peter; and Viertel, Lothar, to Gebr. Happich GmbH. Cover for mirror for sun visor, particularly for automobiles. 4,564,234, Cl. 296-97.00H.
Kaiserfeld, Hans: *See*—
Jerlich, Werner J.; Kaiserfeld, Hans; and Kugler, Alfred, 4,564,566, Cl. 428-687.000.
Kalama Chemical, Inc.: *See*—
Marinak, Michael J.; and Simonson, John L., 4,564,681, Cl. 546-345.000.
Kalb, Barrett F.: *See*—
Lee, James M., 4,564,071, Cl. 168-19.000.
Kalmanczhelyi, Gabor, to Danuvia Kozponti Szerszam-es Keszulekgyar. Hydraulic flow divider/integrator with regulating slide valves with single control edge for two or more consumers. 4,564,038, Cl. 137-101.000.
Kalmanczhelyi, Gabor, to Danuvia Kozponti Szerszam-Es Keszulekgyar. Hydraulic differential locking device with adjustable sensitivity. 4,564,039, Cl. 137-101.000.
Kamata, Kazumasa; Ueda, Kazuo; and Kitai, Kiyokazu, to Mitsubishi Rayon Co., Ltd. Impact modifier and thermoplastic resin composition using the same. 4,564,653, Cl. 525-67.000.
Kamata, Yuzuru: *See*—
Ishikawa, Toshio; Endo, Fumihiro; Yamagiwa, Tokio; and Kamata, Yuzuru, 4,564,721, Cl. 174-10.000.
Kamelmacher, Eduard. Aeration system and method. 4,564,480, Cl. 261-36.00R.
Kammerer, Gerd; and Thoma, Friedrich X., to Dieter Graesslin Feinwerktechnik. Programmable control for a switching chronometer. 4,564,827, Cl. 335-92.000.
Kampers, Gerrit, to Doseq Dutch Oil Spill Eq v.o.f. Device for separating two liquids of different density. 4,564,449, Cl. 210-242.300.
Kan, Fumitaka: *See*—
Nakamura, Shunji; Kan, Fumitaka; Egami, Hidemi; Hosoi, Atsushi; Tajima, Hatsuo; and Nakahata, Kimio, 4,563,978, Cl. 118-658.000.
Kanade, Takeo: *See*—
Okada, Tokuji; and Kanade, Takeo, 4,563,954, Cl. 104-138.00G.
Kanai, Hiroshi: *See*—
Ezaki, Joichiro; Kanai, Hiroshi; and Kitahara, Yoshimi, 4,564,877, Cl. 360-114.000.
Kanai, Seita: *See*—
Tokunaga, Toshimichi; Kanai, Seita; and Anan, Yoshiaki, 4,564,214, Cl. 280-707.000.
Kanamaru, Hisanobu: *See*—
Tomite, Tosio; Ogasawara, Nobuhiko; Isii, Kaniti; and Kanamaru, Hisanobu, 4,564,776, Cl. 310-70.00R.
Kanda, Hiroshi; Katakura, Kageyoshi; and Ishikawa, Isao, to Hitachi, Ltd. Acoustic microscope. 4,563,898, Cl. 73-606.000.
Kanda, Hiroshi: *See*—
Harada, Kunio; Yamaguchi, Sumio; Kanda, Hiroshi; Ishikawa, Isao; and Ohji, Yuzuru, 4,563,900, Cl. 73-644.000.
Kaneda, Sadayoshi: *See*—
Ichimura, Kunihiro; Yamaoka, Tsuguo; Kaneda, Sadayoshi; and Shibuya, Toru, 4,564,580, Cl. 430-281.000.
Kaneko, Masanao: *See*—
Nakazawa, Junichi; Hashimoto, Teruo; Kaneko, Masanao; and Miyaoka, Takeo, 4,564,676, Cl. 544-21.000.
Kaneko, Yasuhiro: *See*—
Yamada, Motokazu; Hayakawa, Hideyuki; Fukui, Tomonori; Matsuhashi, Hajime; Kaneko, Yasuhiro; Ikeda, Motozo; and Nagata, Tomihiko, 4,564,917, Cl. 364-565.000.
Kanno, Fuchio: *See*—
Yasuda, Wataru; Sakamoto, Koji; and Kanno, Fuchio, 4,564,285, Cl. 355-3.0DD.
Kanno, Yoshinori: *See*—
Nagai, Hiroshi; and Kanno, Yoshinori, 4,564,432, Cl. 204-237.000.
Kant, Bernhard; and Jakobs, Hasko, to VDO Adolf Schindling AG. Device for electrically measuring a liquid level. 4,564,881, Cl. 361-284.000.
Kanto Chemical Co., Inc.: *See*—
Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.
Kantor, Martin L., to USV Pharmaceutical Corp. Preparation of N-amino compounds. 4,564,677, Cl. 544-164.000.
Kaplan, Jean P., to Synthelabo. Diphenylazomethines and pharmaceutical compositions containing them. 4,564,636, Cl. 514-567.000.
Kaplan, Philip D., to United States of America, Air Force. Tropospheric scatter communication system having angle diversity. 4,564,935, Cl. 370-38.000.
Karabinis, Peter D.; and Osborne, Thomas L., to AT&T Bell Laboratories. Compensation of filter symbol interference by adaptive estimation of received symbol sequences. 4,564,952, Cl. 375-14.000.
Karioth, Gernot: *See*—
Grimm, Hermann; Konig, Volkmar; and Karioth, Gernot, 4,563,942, Cl. 98-2.160.
Karita, Toshiaki: *See*—
Hayashi, Motohiko; Karita, Toshiaki; Kotani, Matahira; and Sasaki, Hiromu, 4,564,847, Cl. 346-76.0PH.
Karklys, Joseph, to Whirlpool Corporation. Current limiting control circuit for induction range. 4,564,733, Cl. 219-10.770.
Karl Mengele & Sohne: *See*—
Wistuba, Eberhard; Nusser, Martin; and Lenzer, Xaver, 4,563,866, Cl. 56-228.000.
Karl Mengele & Sohne GmbH & Co.: *See*—
Blaich, Michael, 4,564,765, Cl. 250-561.000.
Karlsson, Jarding U.: *See*—
Moosberg, Borje S.; and Karlsson, Jarding U., 4,564,158, Cl. 242-220.000.
Karlsson, Rolf L., to ESAB Aktiebolag. Source of power for arc welding. 4,564,742, Cl. 219-130.100.
Karol, Frederick J.: *See*—
Williams, Gary H.; and Karol, Frederick J., 4,564,660, Cl. 526-106.000.
Karr-Ake, Wendell. Robot. 4,564,331, Cl. 414-730.000.
Karrer, Henry E., to Hewlett-Packard Company. Paramagnetic oxygen sensor. 4,563,894, Cl. 73-24.000.
Kasai, Shoji: *See*—
Maebayashi, Jiro; and Kasai, Shoji, 4,564,213, Cl. 280-690.000.
Kashimura, Eizi: *See*—
Honda, Takashi; Minato, Akira; Izumiya, Masakiyo; Kashimura, Eizi; and Ohsumi, Katsumi, 4,564,499, Cl. 376-305.000.
Kasprzyk, Marlon Z., to AT&T Technologies, Inc. Apparatus for positioning gravity fed components in an electrical test facility. 4,564,110, Cl. 209-544.000.
Kastening, Bertel: *See*—
Furst, Leander; Holzer, Walter; and Kastening, Bertel, 4,564,428, Cl. 204-107.000.
Kasuya, Takahira: *See*—
Morita, Hideaki; Kasuya, Takahira; Yamakawa, Goichi; Tomono, Makoto; Furuta, Isao; and Tsuneyoshi, Minoru, 4,564,573, Cl. 430-109.000.
Katakura, Kageyoshi: *See*—
Kanda, Hiroshi; Katakura, Kageyoshi; and Ishikawa, Isao, 4,563,898, Cl. 73-606.000.
Kataoka, Yushin; Matsuda, Masaaki; Ochi, Kenji; and Aoi, Masahiro, to Sumitomo Chemical Company, Limited. Chelate resin and process for producing the same. 4,564,659, Cl. 525-328.200.
Kato, Kyoichi: *See*—
Funabashi, Tadashi; Takahashi, Junji; and Kato, Kyoichi, 4,564,930, Cl. 369-75.200.
Kato, Shinichi; Tamura, Takeshi; Ambo, Tsugio; and Shimazawa, Katsuji, to Nissan Motor Co., Ltd.; Japan Electronic Control Systems Co., Ltd.; and Shinagawa Jidosha Densen Co., Ltd. Electrical connector assembly. 4,564,252, Cl. 339-91.00R.
Kato, Yoshiharu: *See*—
Nakazawa, Yasuyuki; and Kato, Yoshiharu, 4,564,602, Cl. 501-137.000.
Katori, Tatsuhiko: *See*—
Matsuda, Hideaki; Tatezaki, Ryohta; Mizuno, Hiroyuki; and Katori, Tatsuhiko, 4,564,615, Cl. 514-231.000.
Katsuhara, Yutaka; Nakamichi, Toshihiro; Kawai, Toshikazu; and Nakazora, Toru, to Central Glass Company, Limited. Preparation of 1,1,1,3,3,3-hexafluoropropane-2-ol by hydrogenolysis of hexafluoroacetone hydrate. 4,564,716, Cl. 568-842.000.
Kaufman, R. Gilbert, to Standard Oil Company (Indiana). Optimized photovoltaic effect. 4,564,398, Cl. 148-6.310.
Kawabata, Susumu: *See*—
Hasegawa, Junzo; Kawabata, Susumu; Mimura, Nobuharu; and Kitano, Masao, 4,563,874, Cl. 57-406.000.

Kawaguchi, Masao: *See*—
Akatsuka, Takao; Nakano, Jiro; Ishibashi, Takao; and Kawaguchi, Masao, 4,563,991, Cl. 123-440.000.
Kawai, Hajime: *See*—
Fujino, Yoshiharu; Kawai, Hajime; Nakai, Yasushi; and Tsunemitsu, Katsuhiko, 4,564,679, Cl. 546-116.000.
Kawai, Osamu, to NSK-Warner K. K. Safety belt buckle. 4,563,797, Cl. 24-641.000.
Kawai, Toshikazu: *See*—
Katsuhara, Yutaka; Nakamichi, Toshihiro; Kawai, Toshikazu; and Nakazora, Toru, 4,564,716, Cl. 568-842.000.
Kawakita, Kenji: *See*—
Sakai, Hiroyuki; Takemoto, Toyoki; Kawakita, Kenji; Fujita, Tsutomu; and Akiyama, Atsuko, 4,563,807, Cl. 29-591.000.
Kawamoto, Hideyuki: *See*—
Ohhashi, Tateo; Kawamoto, Hideyuki; and Murakami, Yutaka, 4,564,392, Cl. 75-128.00V.
Kawamoto, Hiroshi: *See*—
Onishi, Yoshiaki, deceased; Onishi, Junko, administratrix; Kawamoto, Hiroshi; and Yasui, Tokumasa, 4,564,925, Cl. 365-203.000.
Kawasaki, Mikio: *See*—
Sakamoto, Eiichi; Kawasaki, Mikio; Ono, Kouji; and Yoshizawa, Tomomi, 4,564,588, Cl. 430-509.000.
Kawashima, Kenichi: *See*—
Yasuda, Hiroshi; Kawashima, Kenichi; Miyazaki, Takayuki; and Kobayashi, Koichi, 4,564,764, Cl. 250-491.100.
Kazuharu, Odawara, to Tokyo Shibaura Denki Kabushiki Kaisha. Radiation-sensitive record disc with improved internal structure. 4,564,850, Cl. 346-137.000.
KB Cold Isostatic Press Systems CIPS: *See*—
Pettersson, Ola, 4,564,352, Cl. 425-405.00H.
Keady, Richard J., to Westinghouse Electric Corp. Oil pot for reactor coolant pump motor and apparatus for controlling the oil level therein. 4,564,500, Cl. 376-463.000.
Kearnan, James E., to Stauffer Chemical Company. Dispersible sulfur product and its process of manufacture. 4,564,670, Cl. 528-389.000.
Kearney, Avery L.: *See*—
Groteke, Daniel E.; and Kearney, Avery L., 4,564,175, Cl. 266-227.000.
Keef, Sherron M.: *See*—
Sawyer, Willard C.; Sawyer, Edith M.; Keef, Sherron M.; and Sawyer, John W., 4,564,368, Cl. 44-1.00D.
Keely, Stanley L.: *See*—
Crawford, Thomas C.; Keely, Stanley L.; Larson, David L.; Lombardino, Joseph G.; and Maciejko, James J., 4,564,614, Cl. 514-222.000.
Keene, John F.; Kuller, Bengt L.; and Kemmeter, Robert G., to Enkel Corporation. Apparatus for continuously supplying a web of sheet material. 4,564,150, Cl. 242-58.100.
Kehr, Wolfgang: *See*—
Rahtz, Dieter; Huth, Andreas; Schmiechen, Ralph; Seidelmann, Dieter; Kehr, Wolfgang; Schneider, Herbert H.; and Braestrup, Claus T., 4,564,610, Cl. 514-80.000.
Keiper Recaro GmbH & Co.: *See*—
Kluting, Bernd; and Bertram, Klaus D., 4,564,236, Cl. 297-344.000.
Keizer, Jon. Capo-tremolo-slide attachment for guitars. 4,563,934, Cl. 84-313.000.
Keller, Bruno: *See*—
Grether, Paul; Brader, Kurt; and Keller, Bruno, 4,563,843, Cl. 52-172.000.
Kelman, Charles D. Corneal implant and method of making the same. 4,563,779, Cl. 623-5.000.
Kemmeter, Robert G.: *See*—
Keene, John F.; Kuller, Bengt L.; and Kemmeter, Robert G., 4,564,150, Cl. 242-58.100.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Furst, Leander; Holzer, Walter; and Kastening, Bertel, 4,564,428, Cl. 204-107.000.
Gupta, Ashok K.; Gyarmati, Erno ; Kreutz, Hermann; Munzer, Rudolf; Naoumidis, Aristides; and Nickel, Hubertus, 4,564,496, Cl. 264-44.000.
Kershaw Manufacturing Company, Inc.: *See*—
Whitaker, John B., Jr., 4,563,826, Cl. 37-97.000.
Kessler, Erich: *See*—
Gerlach, Klaus; and Kessler, Erich, 4,564,488, Cl. 264-41.000.
Ketterson, John B.: *See*—
Schuller, Ivan K.; Ketterson, John B.; and Banerjee, Indrajit, 4,564,564, Cl. 428-662.000.
Kettlestrings, John S., to Kettlestrings, John S.; and Maass, A. Edward. Retainer with coacting legs. 4,563,796, Cl. 24-563.000.
Keyser, Frank: *See*—
Holmes, George; and Keyser, Frank, 4,564,350, Cl. 425-313.000.
Khera, Muhammad; I.: *See*—
Perry, Thomas J.; and Khera, Muhammad; I., 4,564,937, Cl. 370-58.000.
Khodakov, Pavel E.: *See*—
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.
Kienle, Juergen: *See*—
Weining, Hans-Karl; Kienle, Juergen; and Christl, Wilfried, 4,563,998, Cl. 123-568.000.
Kier, Mike. Lighted notepaper tray. 4,564,887, Cl. 362-99.000.
Kikkawa, Shinichi: *See*—
Nonoue, Torahiko; Moriki, Etsuzo; Miyazaki, Yoshifumi; Izawa, Takahal; Kikkawa, Shinichi; and Shiraki, Kenhachi, 4,564,288, Cl. 355-57.000.
Kikui, Hitoshi: *See*—
Okumura, Takuzo; Yanase, Masataka; and Kikui, Hitoshi, 4,564,545, Cl. 428-76.000.
Kilen, Richard S.; and Rittenhouse, Larry E., to International Business Machines Corporation. Phase locked loop and a motor control servo. 4,564,794, Cl. 318-314.000.
Kiley, Thomas L.: *See*—
Thelen, Edmund; Black, Daniel N., III; and Kiley, Thomas L., 4,564,310, Cl. 404-31.000.
Kim, Chung C. Dynamically illuminated guitar. 4,563,933, Cl. 84-267.000.
Kimberly-Clark Corporation: *See*—
Jones, W. Gregory, 4,564,546, Cl. 428-81.000.
Kimmons, D. L.; and Russell, Daniel, to Eaton Corporation. Supercharger with hourglass outlet port. 4,564,346, Cl. 418-206.000.
Kimura, Tadashi: *See*—
Nakamura, Toshiyuki; Inaba, Tsutomu; and Kimura, Tadashi, 4,564,339, Cl. 417-366.000.
Nakamura, Toshiyuki; Sugihara, Masahiro; Inaba, Tsutomu; and Kimura, Tadashi, 4,564,343, Cl. 418-55.000.
Kimura, Yoshikazu: *See*—
Terashima, Shiro; Kimura, Yoshikazu; Suzuki, Michiyo; Matsumoto, Teruyo; and Abe, Rumiko, 4,564,674, Cl. 536-6.400.
Kin, Lai, to Windmere Corporation. Hair curling system. 4,564,033, Cl. 132-39.000.
King, Anthony R.: *See*—
Clarke, Frederick G. E., Jr.; King, Anthony R.; and Majewski, Anthony, 4,564,186, Cl. 270-54.000.
King, Francis C.: *See*—
Agee, John M.; and King, Francis C., 4,564,180, Cl. 269-75.000.
Kingsley, Bertis N.; and Fisher, Ronald D. Trailer hitch assembly. 4,564,209, Cl. 280-468.000.
Kingston, John C. Transport seat for conveying disabled travellers through a stairwell opening of a passenger carrying vehicle. 4,564,086, Cl. 187-12.000.
Kinoshita, Hidefumi: *See*—
Kurabayashi, Katsuhiko; Kinoshita, Hidefumi; Saito, Hitoshi; and Takahashi, Toshio, 4,564,675, Cl. 536-18.100.
Kinsley, Robert J., to Vogel Tool & Die. Tube cut-off apparatus. 4,563,927, Cl. 83-319.000.
Kinson, Philip L.: *See*—
Cooper, Glenn D., deceased; and Kinson, Philip L., 4,564,656, Cl. 525-152.000.
Kinyon, John P.; and Spector, George. Creeper ramp rack. 4,564,216, Cl. 280-770.000.
Kirby, David, to Lutron Electronics Co., Inc. Semiconductor mounted on a yoke in heat transfer relationship. 4,564,801, Cl. 323-324.000.
Kirma, Safa, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Strain relief device for an electrical plug connector. 4,564,255, Cl. 339-103.00R.
Kiselev, Igor V.: *See*—
Alexandrov, Adolf M.; Tsimbler, Jury A.; Iljukhin, Vitaly G.; Yashin, Jury A.; and Kiselev, Igor V., 4,564,318, Cl. 406-192.000.
Kitahara, Yoshimi: *See*—
Ezaki, Joichiro; Kanai, Hiroshi; and Kitahara, Yoshimi, 4,564,877, Cl. 360-114.000.
Kitai, Kiyokazu: *See*—
Kamata, Kazumasa; Ueda, Kazuo; and Kitai, Kiyokazu, 4,564,653, Cl. 525-67.000.
Kitamura, Shunji, to Tokyo Shibaura Denki Kabushiki Kaisha. Signal detector of magnetic disk apparatus. 4,564,870, Cl. 360-51.000.
Kitamura, Sunao, to Aisan Kogyo Kabushiki Kaisha. Apparatus for starting and warming up an internal combustion engine. 4,564,481, Cl. 261-39.00A.
Kitamura, Teruo: *See*—
Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.
Kitano, Masao: *See*—
Hasegawa, Junzo; Kawabata, Susumu; Mimura, Nobuharu; and Kitano, Masao, 4,563,874, Cl. 57-406.000.
Kiwi Coders Corporation: *See*—
Siegal, Burton L., 4,564,846, Cl. 346-75.000.
Klauke, Erich; and Kuhle, Engelbert, to Bayer Aktiengesellschaft. Fluorinated thiocarbonic acid ester-fluorides. 4,564,478, Cl. 260-455.00R.
Kleemann, Axel: *See*—
Drauz, Karlheinz; Kleemann, Axel; and Wirthwein, Rolf, 4,564,514, Cl. 423-589.000.
Klein, Klaus; and Schmitt, Reinhard, to Siemens Aktiengesellschaft. Ejection and grounding system for rack-mounted plug-in modules. 4,564,250, Cl. 339-14.00R.
Klein, Schanzlin & Becker Aktiengesellschaft: *See*—
Hergt, Peter; Nicklas, Alexander; and Becker, Karl-Heinz, 4,564,334, Cl. 415-199.300.
Schill, Jurgen; Rupp, Werner; Schaff, Werner; and Urban, Jorg, 4,563,801, Cl. 29-156.80B.

Klein, Wolfgang: *See*—
Schmitz, Franz J.; Wollbeck, Rudi; and Klein, Wolfgang, 4,564,373, Cl. 55-16.000.

Kleinschmit, Peter: *See*—
Baacke, Michael; and Kleinschmit, Peter, 4,564,512, Cl. 423-328.000.

Klemm, Hans: *See*—
Bauer, Wilhelm; Berger, Josef; Dahm, Horst; Klemm, Hans; Schmid, Peter; Seidl, Horst; and Walter, Dietmar, 4,564,883, Cl. 361-334.000.

Kletzmaier, Karl; and Krippner, Gunther, to ELEKTRONIKBAU Krippner & Kletzmaier Gesellschaft m.b.H. & Co. Locking arrangement for securing doors. 4,563,886, Cl. 70-118.000.

Kliemt, Wilfried; and Krones, Manfred, to Siemens Aktiengesellschaft. Electrical apparatus with base plate. 4,564,884, Cl. 361-353.000.

Kliklok Corporation: *See*—
McElvy, Howell T., 4,563,862, Cl. 53-552.000.

Klingler, Otto; and Linder, Kurt, to Mauser-Werke Oberndorf GmbH. Measuring head of a multi-cord measuring machine. 4,563,823, Cl. 33-558.000.

Kluting, Bernd; and Bertram, Klaus D., to Keiper Recaro GmbH & Co. Seat, particularly a power vehicle seat. 4,564,236, Cl. 297-344.000.

Kluy, Werner: *See*—
Bussemeier, Bernd; Frohning, Carl D.; Horn, Gerhardt; and Kluy, Werner, 4,564,642, Cl. 518-717.000.

KMS Fusion, Inc.: *See*—
Henderson, Timothy M., 4,564,532, Cl. 427-2.000.

Knauf, Werner: *See*—
Stahler, Gerhard; Knauf, Werner; Sachse, Burkhard; and Walters-dorfer, Anna, 4,564,611, Cl. 514-99.000.

Knoop, Franz-Josef. Roller-bearing-mounted telescopic track for drawers or the like. 4,564,247, Cl. 308-3.800.

Knop, Hans-Georg; Nowak, Michael; Redecker, Friedrich; and Tiede, Ralf, to Dr. Ing. Rudolf Hell GmbH. Method and an apparatus for producing color separations for single color printing. 4,564,859, Cl. 358-75.000.

Knorr Shokuhin Kabushiki Kaisha: *See*—
Ohgami, Tadashi; Naitoh, Zenjiro; Saotome, Haruo; Takekoshi, Kenji; and Saitoh, Kimio, 4,564,531, Cl. 426-589.000.

Koala Technologies Corporation: *See*—
Moore, Cecil A.; and Langford, Gordon B., 4,564,079, Cl. 178-18.000.

Kobayashi, Fumiaki; and Ito, Yoshiyasu, to Toyota Jidosha Kabushiki Kaisha. Diesel fuel injection pump with electronically controlled fuel spilling and cutoff and recirculation venting of split fuel. 4,563,992, Cl. 123-458.000.

Kobayashi, Koichi: *See*—
Yasuda, Hiroshi; Kawashima, Kenichi; Miyazaki, Takayuki; and Kobayashi, Koichi, 4,564,764, Cl. 250-491.100.

Kobayashi, Minoru. Top drying nozzle device for vehicle washing apparatus. 4,563,788, Cl. 15-312.00R.

Kobayashi, Yoshiro: *See*—
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,564,474, Cl. 260-397.200.

Kobuke, Yoshiaki: *See*—
Tabushi, Iwao; and Kobuke, Yoshiaki, 4,564,690, Cl. 549-352.000.

Kocatas, Babur M., to Monsanto Company. Fiber bed separator. 4,564,377, Cl. 55-488.000.

Koch, Carl: *See*—
Koch, Hans-Carl; Koch, Carl; and Gfeller, Karl, 4,564,277, Cl. 354-160.000.

Koch, Hans-Carl; Koch, Carl; and Gfeller, Karl, to Sinar AG Schaffhausen. Apparatus for a photographic camera with lens and film carriers which can be reset in relation to one another. 4,564,277, Cl. 354-160.000.

Koch, Rudolf K.; and Affonso, Octavio F. Reversing valve construction and method of making the same. 4,564,045, Cl. 137-625.430.

Kocher, Helmut: *See*—
Bieringer, Hermann; Burstell, Helmut; Handte, Reinhard; Kocher, Helmut; and Schulze, Ernst-Friedrich, 4,564,381, Cl. 71-88.000.

Kodani, Hideyuki: *See*—
Enokido, Shunji; Kodani, Hideyuki; and Ohta, Hajime, 4,564,078, Cl. 178-18.000.

Koddenberg, Theo; and Hegemann, Franz-Josef, to Dr. C. Otto & Comp. GmbH. Ascension pipe for coke ovens. 4,564,421, Cl. 202-254.000.

Koebernick, Hubert: *See*—
Feldmann, John; Koebernick, Hubert; Richter, Klaus; and Woelk, Hans-Ulrich, 4,564,692, Cl. 549-464.000.

Koenig & Bauer Aktiengesellschaft: *See*—
Schmitt, Gunter K., 4,564,470, Cl. 270-21.100.

Koerner, Gotz: *See*—
Callaghan, Ian C.; Fink, Hans-Ferdi; Gould, Clive M.; Koerner, Gotz; Patzke, Hans-Jurgen; and Weitemeyer, Christian, 4,564,665, Cl. 528-21.000.

Koestecki, Raymond J., to General Motors Corporation. Preparing glass flake reinforced reaction injection molded polymers. 4,564,491, Cl. 264-108.000.

Kogure, Osamu: *See*—
Morita, Masao; Tanaka, Akinobu; Imamura, Saburo; Tamamura, Toshiaki; and Kogure, Osamu, 4,564,579, Cl. 430-270.000.

Kogyo Gijutsuin: *See*—
Ichimura, Kunihiro; Yamaoka, Tsuguo; Kaneda, Sadayoshi; and Shibuya, Toru, 4,564,580, Cl. 430-281.000.

Kohlen, Karl-Heinz, to W. Schlafhorst & Co. Apparatus for making tension-proof joint for endless-fiber threads. 4,564,228, Cl. 289-2.000.

Kohmura, Shigeru: *See*—
Tsuge, Mitsuo; Kohmura, Shigeru; Sugiyama, Keiichi; Saitoh, Hisao; and Saitoh, Shigenori, 4,564,119, Cl. 220-270.000.

Kohnlechner, Rainer, to Ermeto Armaturen GmbH. Pressure and temperature sensor. 4,563,902, Cl. 73-708.000.

Kohnlechner, Rainer; Beeke, Herbert; and Suckow, Hans, to Ermeto Armaturen GmbH. Pressure sensor. 4,563,903, Cl. 73-727.000.

Koike, Masami: *See*—
Fujimori, Yoshitsugu; Adachi, Ryouhei; Ebisawa, Hiroo; Kurachi, Yukio; and Koike, Masami, 4,564,232, Cl. 296-146.000.

Koishi, Kenji: *See*—
O'Hara, Shunji; Yoshida, Tomio; Satoh, Isao; and Koishi, Kenji, 4,564,931, Cl. 369-110.000.

Kojima, Soichi: *See*—
Shintani, Tsuneo; Kojima, Soichi; and Goto, Masuo, 4,564,493, Cl. 264-209.100.

Kojima, Tosaku; Matsumoto, Kunio; and Suzuki, Yoshihisa, to Hitachi, Ltd. Bundle of optical fibers. 4,564,261, Cl. 350-96.240.

Kokubo, Eiichi; Arikawa, Junichi; Goi, Kowichi; and Imura, Shinichi, to Laurel Bank Machine Co., Ltd. Stacker supporting device in automatic money depositing and disbursing machine. 4,564,140, Cl. 232-57.500.

Kokubu, Sadao, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Dimmer for use with vehicle. 4,564,789, Cl. 315-79.000.

Kolb, Richard L., to Crocker National Bank. Method and apparatus for testing seismic vibrators. 4,564,927, Cl. 367-42.000.

Komiya, Hidetsugu; and Inoue, Michiya, to Fanuc Ltd. Contactless relay. 4,564,768, Cl. 307-140.000.

Kommanditbolaget Aldolf: *See*—
Adolfsson, Bengt O., 4,564,126, Cl. 222-61.000.

Komori Printing Machinery Co., Ltd.: *See*—
Ohta, Toshio, 4,564,860, Cl. 358-107.000.

Komoto, Shinsuke, to Asahi Kogaku Kogyo Kabushiki Kaisha. Floating lens extending mechanism. 4,564,264, Cl. 350-255.000.

Kondo, Kunio; Haga, Katutoshi; and Takeuchi, Tokunari, to Fuji Seiko Limited. End-milling cutter with drilling capability. 4,564,321, Cl. 407-36.000.

Kondo, Susumu: *See*—
Ueda, Nobuo; Kondo, Susumu; and Hazue, Masaaki, 4,564,472, Cl. 260-113.000.

Konig, Christian: *See*—
Becher, Dieter; Konig, Christian; Tiemann, Eckhard; Czwalinna, Hans; and Hagen, Wilhelm, 4,564,513, Cl. 423-415.00A.

Konig, Volkmar: *See*—
Grimm, Hermann; Konig, Volkmar; and Karioth, Gernot, 4,563,942, Cl. 98-2.160.

Koninklijke Emballage Industrie Van Leer B.V.: *See*—
Visser, Berend L., 4,563,859, Cl. 53-450.000.

Konishi, Hiroyuki; Hashimoto, Shunichi; and Oshio, Hiromichi, to Sumitomo Chemical Company, Limited. Trifluoromethanesulfonanilides, and their production and use. 4,564,386, Cl. 71-103.00C.

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Strichman, George A.; Dulis, Edward J.; Narasimhan, Kalatur S. V. L.; and Lizzi, Thomas, 4,564,401, Cl. 148-104.000.

Lloyd-Davies, William T., to Scholle Corporation. Fluid dispensing assembly. 4,564,132, Cl. 222-522.000.

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LoCicero, Joseph L.; Pazarci, Melih; and Rzeszewski, Theodore S., to AT&T Bell Laboratories. Aspect ratio improvement for compatible high-definition television. 4,564,857, Cl. 358-11.000.

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Tibbals, Edward C., Jr., 4,563,915, Cl. 74-800.000.

Loew's Theatres, Inc.: *See*—
Jessup, Terry D.; and Hudson, Albert B., 4,564,030, Cl. 131-336.000.

Logan, Eugene T.: *See*—
Barlow, Richard A.; and Logan, Eugene T., 4,563,946, Cl. 99-450.000.

Logsdon, Duane D. Miniature washing machine box. 4,564,249, Cl. 312-229.000.

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Crawford, Thomas C.; Keely, Stanley L.; Larson, David L.; Lombardino, Joseph G.; and Maciejko, James J., 4,564,614, Cl. 514-222.000.

Long, Charles E., to Altech Industries, Inc. Bracing for studwalls. 4,563,851, Cl. 52-656.000.

Longworth, Leroy L.: *See*—
Blaske, Paul S.; Zimmerman, Larry D.; Calderon, Arthur; and Longworth, Leroy L., 4,564,585, Cl. 430-313.000.

Lonza Ltd.: *See*—
Abacherli, Claudio, 4,564,696, Cl. 560-53.000.

Lore, Albert L.; and Raynolds, Stuart, to Du Pont de Nemours, E. I., and Company. Fluorine-containing polymer compositions and their preparation. 4,564,561, Cl. 428-422.000.

Loren, Mark; and Pedroso, Raul I., to Coulter Corporation. Method and apparatus for removing foreign matter from a flow cell of a particle study device. 4,564,803, Cl. 324-71.100.

Loring, Wolson J.; and Schaedler, Charles C. Tethered ring game with hook configuration. 4,564,200, Cl. 273-332.000.

Loutaty, Roben; and Haquet, Yvon, to Compagnie Francaise de Raffinage. Apparatuses for the loading of an enclosure with a particulate solid. 4,564,328, Cl. 414-301.000.

Lowe, Ronnie D., to American Zettler, Inc. Electromagnetic relay. 4,564,828, Cl. 335-128.000.

Lucarelli, Anthony V.: *See*—
Illenberg, Cornelius J.; Dinger, Ronald W.; Kunde, David A.; and Lucarelli, Anthony V., 4,564,829, Cl. 335-135.000.

Lucht, Wilbert A., to United States Steel Corporation. Lubricated wire rope. 4,563,870, Cl. 57-223.000.

Ludszeweit, Dieter: *See*—
Wahle, Gunter; Ludszeweit, Dieter; and Heitmann, Uwe, 4,564,026, Cl. 131-84.300.

Luitz, Max; and Weiss, Eugen, to Ess GmbH Skibindungen. Ski brake. 4,564,211, Cl. 280-605.000.

Lumalampan Aktiebolag: *See*—
Sikander, Ake; Biorkman, Ake; and Jonsson, Gunther, 4,564,174, Cl. 266-149.000.

Lummus Industries, Inc.: *See*—
Beeland, William D., 4,563,794, Cl. 19-48.00R.

Lungu, Corneliu, to Robert Bosch GmbH. Solenoid valve. 4,564,046, Cl. 137-625.650.

Lunig, Hermann, to Mannesmann Aktiengesellschaft. Container for feeding arc furnaces. 4,564,327, Cl. 414-199.000.

Lusch, Herbert: *See*—
Hofmann, Wilfried; Lusch, Herbert; Rauffer, Walter; Zieran, Eberhard; and Sylla, Jurgen, 4,564,276, Cl. 353-55.000.

Lutron Electronics Co., Inc.: *See*—
Kirby, David, 4,564,801, Cl. 323-324.000.

Lvovich, Florenty I.: *See*—
Busse-Machukas, Vladimir B.; Lvovich, Florenty I.; Spasskaya, Evdokia K.; Kubasov, Vladimir L.; Mazanko, Anatoly F.; Druzhinin, Ernest A.; Martynov, Alexandr N.; and Nelipa, Ljudmila N., 4,564,434, Cl. 204-290.00F.

M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See*—
Holz, Joachim; Meier, Wolfgang; Ogorek, Kurt; Goris, Heinrich; and Schwarting, Karl H., 4,564,241, Cl. 299-43.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See*—
Fischer, Hermann, 4,563,950, Cl. 101-178.000.
Mathes, Josef; and Holl, Roland, 4,563,951, Cl. 101-216.000.

Maass, A. Edward: *See*—
Kettlestrings, John S., 4,563,796, Cl. 24-563.000.

Maccherone, Lawrence S.: *See*—
Bressan, Renato J.; Halasz, Andrew; and Maccherone, Lawrence S., 4,563,887, Cl. 72-84.000.

Macchi, Odile, to Centre National de la Recherche. Adaptive echo canceller with AGC for transmission systems. 4,564,934, Cl. 370-32.000.

Machizawa, Kenzi: *See*—
Kunugi, Yoshifumi; Sugimoto, Shigeo; Minakawa, Kisaburo; and Machizawa, Kenzi, 4,563,882, Cl. 62-476.000.

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Crawford, Thomas C.; Keely, Stanley L.; Larson, David L.; Lombardino, Joseph G.; and Maciejko, James J., 4,564,614, Cl. 514-222.000.

Mackel, Nathaniel T. Nail clipper holder. 4,564,034, Cl. 132-73.000.

Mackovjak, Paul V.: *See*—
Johnson, Edgar G., Jr.; Cornelison, James J.; and Mackovjak, Paul V., 4,563,907, Cl. 73-864.160.

Madden, Roy H., to Excalibur Locks, Inc. Patio sliding door lock assembly and method. 4,563,885, Cl. 70-97.000.

Maderspach, Andrea: *See*—
Toth, Edit; Torley, Jozsef; Hajdu, Istvan; Gorog, Sander; Maderspach, Andrea; Hajos, Gyorgy; Szporny, Laszlo ; and Javor, Andras, 4,564,630, Cl. 514-478.000.

Maebayashi, Jiro; and Kasai, Shoji, to Mazda Motor Corporation. Strut type vehicle suspension mechanism. 4,564,213, Cl. 280-690.000.

Maeda, Shuichi: *See*—
Niwa, Toshio; Himeno, Kiyoshi; and Maeda, Shuichi, 4,564,673, Cl. 534-794.000.

Maeda, Tsuneo, to Nippon Aluminium Mfg. Co., Ltd., The; and Nippon Alumi Tsurmuraru Corp. Co., The. Vessel for use with high-frequency induction heater. 4,564,001, Cl. 126-390.000.

Maeguchi, Kenji, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a semiconductor device. 4,564,583, Cl. 430-312.000.

Maeshima, Katsuyoshi, to Canon Kabushiki Kaisha. Image forming apparatus. 4,564,864, Cl. 358-280.000.

Magnetic Peripherals, Inc.: *See*—
Blaske, Paul S.; Zimmerman, Larry D.; Calderon, Arthur; and Longworth, Leroy L., 4,564,585, Cl. 430-313.000.

Magnum Research, Inc.: *See*—
White, Bernard C., 4,563,937, Cl. 89-185.000.

Mahlein, Hans: *See*—
Winzer, Gerhard; and Mahlein, Hans, 4,564,755, Cl. 250-227.000.

Maiorano, Dominick J., to Xerox Corporation. Illumination device. 4,564,286, Cl. 355-11.000.

Majestic Rides Mfg. Co., Inc.: *See*—
Kudler, Paul S., 4,564,208, Cl. 280-423.00B.

Majewski, Anthony: *See*—
Clarke, Frederick G. E., Jr.; King, Anthony R.; and Majewski, Anthony, 4,564,186, Cl. 270-54.000.

Makarov, Gennady S.: *See*—
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.

Makihara, Hiroshi: *See*—
Oshida, Yoshitada; Makihara, Hiroshi; and Aoki, Nobuhiko, 4,564,296, Cl. 356-381.000.

Makimura, Toshiro: *See*—
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Maley, Gerald A.; and Westcott, Douglas W., to International Business Machines Corporation. Latching circuit speed-up technique. 4,564,772, Cl. 307-443.000.

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Mandrin, Charles, to Sulzer Brothers Limited. Method for separating at least one heavy isotope from a hydrogen-containing medium. 4,564,515, Cl. 423-648.00A.

Mangal, Michel, to SADACEM. Device for interlocking together two adjacent metal frames from two different levels. 4,563,849, Cl. 52-235.000.

Mannesmann AG: *See*—
Schrewe, Hans; Pleschiutschnigg, Fritz-Peter; van Bonn, Hans; Holter, Karl; and Wiegard, Gustav, 4,564,058, Cl. 164-72.000.

Mannesmann Aktiengesellschaft: *See*—
Lunig, Hermann, 4,564,327, Cl. 414-199.000.

Manufacture de Machines du Haut Rhin, "Manurhin" : *See*—
Rinck, Jean C.; Lecomte, Alain M.; and Scherrer, Alain, 4,563,935, Cl. 86-17.000.

Mao, Chung-Ling: *See*—
Chang, Man-Chium; Mao, Chung-Ling; and Vargas, Richard R., 4,564,664, Cl. 524-826.000.
Marathon Oil Company: *See*—
Norton, Charles J., 4,564,070, Cl. 166-295.000.
Marchand, Paul A.; and Abramson, Noel W. Oral irrigating device. 4,564,005, Cl. 128-66.000.
Marcinka, John W.: *See*—
Glenn, William E.; and Marcinka, John W., 4,564,928, Cl. 367-117.000.
Marek, James R.: *See*—
Warner, Dean C.; and Marek, James R., 4,564,830, Cl. 337-246.000.
Marien, August M.: *See*—
Uytterhoeven, Herman J.; De Winter, Walter F.; and Marien, August M., 4,564,574, Cl. 430-115.000.
Marinak, Michael J.; and Simonson, John L., to Kalama Chemical, Inc. Production of mixtures rich in 3-chloro-2-trichloromethyl pyridine. 4,564,681, Cl. 546-345.000.
Markert, Helmut; Rogler, Wolfgang; Kretzschman, Klaus; and Hauschildt, Klaus-Robert, to Siemens Aktiengesellschaft. Method for the manufacture of reaction resin molding materials. 4,564,651, Cl. 524-589.000.
Martin, Eugene C.; and De Fusco, Albert A., to United States of America, Navy. Free radical cure of the bismaleimide of dimer diamine. 4,564,663, Cl. 526-262.000.
Martin, Eugene G.; and Martin, Harold C., to Favorite Manufacturing, Inc. Wing cutter apparatus. 4,563,791, Cl. 17-11.000.
Martin, F. Wayne; Shahbazi, Samson; and Schoonejongen, Ronald J., to Electro Materials Corp. of America. Solderable conductor. 4,564,563, Cl. 428-546.000.
Martin, Harold C.: *See*—
Martin, Eugene G.; and Martin, Harold C., 4,563,791, Cl. 17-11.000.
Martin, Jeff: *See*—
Davies, Lawrence W.; Martin, Jeff; Sumerak, Joseph E.; and Church, Kenneth, 4,564,540, Cl. 428-34.000.
Martinot-Lagarde, Philippe: *See*—
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Martinson Manufacturing Company, Inc.: *See*—
Kramer, Dean C., 4,564,041, Cl. 137-565.000.
Martynov, Alexandr N.: *See*—
Busse-Machukas, Vladimir B.; Lvovich, Florenty I.; Spasskaya, Evdokia K.; Kubasov, Vladimir L.; Mazanko, Anatoly F.; Druzhinin, Ernest A.; Martynov, Alexandr N.; and Nelipa, Ljudmila N., 4,564,434, Cl. 204-290.00F.
Maruyama, Akio: *See*—
Ishioka, Sachio; Imamura, Yoshinori; Hirai, Tadaaki; Nobutoki, Saburo; and Maruyama, Akio, 4,564,784, Cl. 313-384.000.
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Gregory, Lee W., 4,563,965, Cl. 112-302.000.
Masaichiro, Masui, to Sekimoto, Hiroshi; Nakanishi, Michio; and Akiyoshi, Masataka. Compositions containing unsaturated fatty acid compounds and method of stabilizing unsaturated fatty acid compounds. 4,564,475, Cl. 260-398.500.
Masaitis, William: *See*—
Grossman, Leonard N.; Landry, James D.; Masaitis, William; Canada, Robert O.; and McKenzie, Gerald W., 4,564,498, Cl. 376-245.000.
Masaki, Jun. Transfer sheet with color pattern having metallic luster, and method of manufacturing said sheet. 4,564,571, Cl. 430-15.000.
Maschinenbau Grieshaber GmbH & Co.: *See*—
Winkelmann, Wolfgang, 4,563,838, Cl. 51-58.000.
Maschinenfabrik Alfred Schmermund GmbH & Co.: *See*—
Oberdorf, Manfred, 4,564,412, Cl. 156-484.000.
Mashida, Tooru: *See*—
Ikegami, Iwao; and Mashida, Tooru, 4,564,308, Cl. 403-166.000.
Mason, Charles D.: *See*—
Hochberg, Arie; and Mason, Charles D., 4,564,650, Cl. 524-288.000.
Masuda, Mitsuhiro; Naito, Shotaro; Tokuyama, Keiichi; and Watanabe, Shizuhisa, to Hitachi, Ltd. Trip computer for vehicles. 4,564,905, Cl. 364-424.000.
Matesa, Joseph M.: *See*—
Kunkle, Gerald E.; and Matesa, Joseph M., 4,564,379, Cl. 65-135.000.
Mathes, Josef; and Holl, Roland, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Clamping and adjusting device for the smoothing means on the storage cylinder of a sheet offset press. 4,563,951, Cl. 101-216.000.
Mathias, Richard A., to Camtech, Inc. Load measurement apparatus including miniature instrumented hydrostatic cell. 4,563,906, Cl. 73-862.580.
Mathieu, Bernd: *See*—
Weber, Wolfram; Neumann, Hans-Jurgen; Meisberger, Artur; and Mathieu, Bernd, 4,564,342, Cl. 417-477.000.
Matono, Koichi: *See*—
Hayashi, Hiroshi; Matono, Koichi; Asahi, Satoshi; and Uoi, Michitake, 4,564,647, Cl. 523-211.000.
Matsubara, Mamoru: *See*—
Takada, Shigetaka; Makimura, Toshiro; and Matsubara, Mamoru, 4,564,145, Cl. 239-585.000.
Matsuda, Hideaki; Tatezaki, Ryohta; Mizuno, Hiroyuki; and Katori, Tatsuhiko, to SS Pharmaceutical Co., Ltd. Immunoactivator. 4,564,615, Cl. 514-231.000.
Matsuda, Masaaki: *See*—
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Matsuhashi, Hajime: *See*—
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Matsumoto, Akio: *See*—
Iwaki, Yoshiyuki; Matsumoto, Akio; and Yokota, Mitsuyoshi, 4,564,799, Cl. 320-6.000.
Matsumoto, Kazuhisa: *See*—
Ohno, Kiyotaka; Nagase, Hiroshi; Ishikawa, Mamoru; Matsumoto, Kazuhisa; and Nishio, Shintaro, 4,564,620, Cl. 514-337.000.
Matsumoto, Kunio: *See*—
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Matsumoto, Teruyo: *See*—
Terashima, Shiro; Kimura, Yoshikazu; Suzuki, Michiyo; Matsumoto, Teruyo; and Abe, Rumiko, 4,564,674, Cl. 536-6.400.
Matsushita Electric Industrial Co., Ltd.: *See*—
Kuroda, Takao; and Horii, Kenju, 4,564,766, Cl. 250-578.000.
O'Hara, Shunji; Yoshida, Tomio; Satoh, Isao; and Koishi, Kenji, 4,564,931, Cl. 369-110.000.
Sakai, Hiroyuki; Takemoto, Toyoki; Kawakita, Kenji; Fujita, Tsutomu; and Akiyama, Atsuko, 4,563,807, Cl. 29-591.000.
Suzuki, Takashi; Shinohara, Koichi; Odagiri, Masaru; and Fujita, Takashi, 4,564,549, Cl. 428-141.000.
Matsushita Electric Works, Ltd.: *See*—
Araki, Masakatsu, 4,564,032, Cl. 132-33.00R.
Okamoto, Futoshi; and Mitani, Masataka, 4,564,897, Cl. 363-132.000.
Matsushita, Ken; Ikeda, Hiroki; and Sugiyama, Yoshihide, to Duplo Seiki Corporation; and Duplo Manufacturing Corporation. Ink detecting device for rotary printer. 4,563,947, Cl. 101-122.000.
Matsutani, Shigeru: *See*—
Hirai, Kentario; Ishiba, Teruyuki; Matsutani, Shigeru; Makino, Itsuo; Fujishita, Toshio; Doteuchi, Masami; and Otani, Koichi, 4,564,623, Cl. 514-408.000.
Mattel, Inc.: *See*—
Grimm, Thomas H., 4,564,162, Cl. 246-432.000.
Lambert, Gerard L.; McKittrick, Michael T.; Rich, Hubert A.; and Saffer, Gary M., 4,564,197, Cl. 273-86.00D.
Mattelin, Antoon, to Siemens Aktiengesellschaft. Apparatus for labeling parts with a laser. 4,564,739, Cl. 219-121.0LH.
Matveev, Alexandr I.: *See*—
Dobatkin, Vladimir I.; Eakin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.
Maurice, David M.; and Brooks, Darrell, to Leland Stanford Junior University, The Board of Trustees of the. Apparatus for introducing ionized drugs into the posterior segment of the eye and method. 4,564,016, Cl. 128-645.000.
Mauser-Werke Oberndorf GmbH: *See*—
Klingler, Otto; and Linder, Kurt, 4,563,823, Cl. 33-558.000.
Mavie Limited: *See*—
Hannah, Joseph R., 4,564,201, Cl. 277-1.000.
Maximenko, Alexandr V.; Tischenko, Elena G.; Torchilin, Vladimir P.; Smirnov, Vladimir N.; and Chazov, Evgeny I. Urokinase derivatives covalently bound to fibrinogen. 4,564,596, Cl. 435-177.000.
Mayne, Chris: *See*—
Glover, Neal; Clausen, Kermit; Mayne, Chris; and Glissmann, Randy, 4,564,945, Cl. 371-38.000.
Mazanko, Anatoly F.: *See*—
Busse-Machukas, Vladimir B.; Lvovich, Florenty I.; Spasskaya, Evdokia K.; Kubasov, Vladimir L.; Mazanko, Anatoly F.; Druzhinin, Ernest A.; Martynov, Alexandr N.; and Nelipa, Ljudmila N., 4,564,434, Cl. 204-290.00F.
Mazda Motor Corporation: *See*—
Higashi, Haruki; Waki, Kouichirou; Fukuiri, Masaru; and Yukitomo, Kazuo, 4,563,917, Cl. 74-866.000.
Maebayashi, Jiro; and Kasai, Shoji, 4,564,213, Cl. 280-690.000.
Tokunaga, Toshimichi; Kanai, Seita; and Anan, Yoshiaki, 4,564,214, Cl. 280-707.000.
Mazzorana, Alfred B., to Societe de Paris et du Rhone, S.A. Device for rotatably driving a cooling fan of an electric rotating machine. 4,564,775, Cl. 310-62.000.
McCann, T. Michael, to General Instrument Corporation. Rectifier with slug construction and mold for fabricating same. 4,564,885, Cl. 361-436.000.
McClure, Robert H.; Peach, Robert W.; and Peach, John R. Tennis ball support device. 4,564,195, Cl. 273-29.00A.
McDonald, Douglas A., to Rotopack Tools Pty. Limited. Impact tool. 4,563,923, Cl. 81-466.000.
McDonnell Douglas Corporation: *See*—
Stone, Kenneth W., 4,564,275, Cl. 353-3.000.
McDougall, Edward E., to Racecourse Co-Operative Sugar Association Ltd. Recirculation heat exchanger and apparatus including same. 4,564,062, Cl. 165-108.000.
McElvy, Howell T., to Kliklok Corporation. Package forming apparatus with combined holding and stripper mechanism. 4,563,862, Cl. 53-552.000.
McGarry, Phillip E.: *See*—
Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., 4,564,369, Cl. 44-2.000.

McKechnie, Ronald M. K.; and Swart, Renier P. Skip filling apparatus and method. 4,564,330, Cl. 414-612.000.

McKenzie, Gerald W.: *See—*
Grossman, Leonard N.; Landry, James D.; Masaitis, William; Canada, Robert O.; and McKenzie, Gerald W., 4,564,498, Cl. 376-245.000.

McKittrick, Michael T.: *See—*
Lambert, Gerard L.; McKittrick, Michael T.; Rich, Hubert A.; and Saffer, Gary M., 4,564,197, Cl. 273-86.00D.

McMackins, Dudley E.: *See—*
Coleman, James P.; and McMackins, Dudley E., 4,564,689, Cl. 549-326.000.

McMorrow, Harold L.: *See—*
Granzow, Robert H.; Placke, Dale L.; McMorrow, Harold L.; and Nagy, Charles S., 4,564,122, Cl. 221-12.000.

McNair, John R., to Westvaco Corporation. Single sheet feeding mechanism. 4,564,188, Cl. 271-103.000.

McNally, Guy W. W.; Lagadec, Roger; and Pelloni, Daniele P. C., to Willi Studer AG. Method and apparatus for measuring the time difference between two sampling times. 4,564,918, Cl. 364-569.000.

McNeilab, Inc.: *See—*
Ho, Chih Y., 4,564,476, Cl. 260-404.000.

Mead Corporation, The: *See—*
Calvert, Rodney K., 4,563,853, Cl. 53-48.000.
Suttles, James M., 4,564,111, Cl. 211-189.000.

Meier, Wolfgang: *See—*
Holz, Joachim; Meier, Wolfgang; Ogorek, Kurt; Goris, Heinrich; and Schwarting, Karl H., 4,564,241, Cl. 299-43.000.

Meisberger, Artur: *See—*
Weber, Wolfram; Neumann, Hans-Jurgen; Meisberger, Artur; and Mathieu, Bernd, 4,564,342, Cl. 417-477.000.

Melamed, Anna, to Danfoss A/S. Saturation control of a switching transistor. 4,564,769, Cl. 307-300.000.

Melnik, Gary A.: *See—*
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.

Melocik, Grant C.; and Wible, John E., to Towmotor Corporation. Controlling arrangement. 4,564,085, Cl. 187-9.00R.

Mendler, Leo R., to Continental White Cap, Inc. Injection molded plastic closure. 4,564,113, Cl. 215-252.000.

Menezes, Edgar: *See—*
Lilenfeld, Robert; Popadiuk, Nicholas M.; Steinheuser, Peter; and Menezes, Edgar, 4,564,013, Cl. 128-335.500.

Merak S.p.A.: *See—*
Pellegrini, Antonio; and Beghelli, Benito, 4,564,553, Cl. 428-296.000.

Merck & Co., Inc.: *See—*
Firestone, Raymond A., 4,564,635, Cl. 514-562.000.

Meritt, Allan S.: *See—*
Guyette, Richard R.; Hall, Eddie T.; Meritt, Allan S.; Newson, Stephen R.; Scalzi, Casper A.; and Sears, Glenn W., Jr., 4,564,903, Cl. 364-300.000.

Merva, John J.: *See—*
Garretson, Jay H.; Lazor, Thomas E.; Merva, John J.; Nestor, Charles R.; Plyler, Robert G.; Seiffert, Raymond C.; and Ziegler, Jeffrey L., 4,564,258, Cl. 339-220.00R.

Merz, Walter: *See—*
Dickore, Karlfried; Engels, Hans D.; Kratzer, Hans; and Merz, Walter, 4,564,704, Cl. 562-577.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Kirma, Safa, 4,564,255, Cl. 339-103.00R.

Metal Closures Limited: *See—*
Herbert, James F., 4,564,117, Cl. 215-329.000.

Metalworking Lasers International Ltd.: *See—*
Daniel, Jacob, 4,564,947, Cl. 372-58.000.

Metcast Associates, Inc.: *See—*
Groteke, Daniel E.; and Kearney, Avery L., 4,564,175, Cl. 266-227.000.

Meyborg, Holger: *See—*
Salzburg, Herbert; Hajek, Manfred; and Meyborg, Holger, 4,564,645, Cl. 521-159.000.

Miale, Joseph N.: *See—*
Chang, Clarence D.; and Miale, Joseph N., 4,564,719, Cl. 585-640.000.

Michaud, Jean-Francois: *See—*
Bruel, Michel; and Michaud, Jean-Francois, 4,564,763, Cl. 250-396.0ML.

Michel, Alfred: *See—*
Seitz, Werner; Teschendorf, Hans-Jurgen; Michel, Alfred; Traut, Martin; Hofmann, Hans P.; and Kreiskott, Horst, 4,564,641, Cl. 514-650.000.

Micromedic Systems Inc.: *See—*
Johnson, Edgar G., Jr.; Cornelison, James J.; and Mackovjak, Paul V., 4,563,907, Cl. 73-864.160.

Micropore International Limited: *See—*
Hughes, John T., 4,564,547, Cl. 428-117.000.

Microwave Applications Group: *See—*
Boyd, Charles R., Jr., 4,564,824, Cl. 333-137.000.

Miehlich, Dieter. Ball separating device for ball throwing machines, especially for squash balls or tennis balls. 4,563,999, Cl. 124-50.000.

Mike & Kremmel Limited: *See—*
Kreth, Julis; Schreiber, Alfons; and Steinko, Willi, 4,563,818, Cl. 30-417.000.

Miki, Yukio, to Minolta Camera Kabuskiki Kaisha. Optical unit. 4,564,265, Cl. 350-255.000.

Mikuski, John J., to Anthony Industries, Inc. Composite sheathing. 4,564,554, Cl. 428-311.900.

Mildenberger, Hilmar: *See—*
Liebl, Rainer; Handte, Reinhard; Mildenberger, Hilmar; Bauer, Klaus; and Bieringer, Hermann, 4,564,382, Cl. 71-88.000.

Millard, Alan A.: *See—*
Wang, Sophia; and Millard, Alan A., 4,564,438, Cl. 208-33.000.

Miller, Moshe, to Industries Development Corporation (International Services). Continuously variable transmission with auxiliary drive. 4,563,914, Cl. 74-687.000.

Mills, Kenneth R., to General Electric Company. Telephone illumination circuit. 4,564,729, Cl. 179-81.00C.

Milwaukee Faucets (Div. of Universal-Rundle Corporation): *See—*
Rudelick, John, 4,564,040, Cl. 137-454.600.

Mimura, Nobuharu: *See—*
Hasegawa, Junzo; Kawabata, Susumu; Mimura, Nobuharu; and Kitano, Masao, 4,563,874, Cl. 57-406.000.

Minakawa, Kisaburo: *See—*
Kunugi, Yoshifumi; Sugimoto, Shigeo; Minakawa, Kisaburo; and Machizawa, Kenzi, 4,563,882, Cl. 62-476.000.

Minarik, Ferdinand; and Paletzki, Hans-Joachim, to Fuchs Systemtechnik GmbH. Furnace charge preheater. 4,563,958, Cl. 110-219.000.

Minato, Akira: *See—*
Honda, Takashi; Minato, Akira; Izumiya, Masakiyo; Kashimura, Eizi; and Ohsumi, Katsumi, 4,564,499, Cl. 376-305.000.

Mine Safety Appliances Company: *See—*
Brinkhoff, Carl H., 4,564,009, Cl. 128-152.000.

Minnesota Mining and Manufacturing Company: *See—*
Albin, Loren D., 4,564,662, Cl. 526-247.000.
Brochman, Wilfred R., 4,564,121, Cl. 220-359.000.
Cybulski, Claude E., 4,564,156, Cl. 242-197.000.
Cybulski, Claude E., 4,564,871, Cl. 360-60.000.
Huppert, James C., 4,563,839, Cl. 51-334.000.
Lange, Roger W., 4,564,556, Cl. 428-325.000.
Patel, Kalyanji U., 4,564,366, Cl. 8-94.10R.
Roche, Karen M.; and Eyerly, Robert M., 4,563,778, Cl. 623-22.000.
Weavers, Mark W.; Gebeke, Charles D.; and Yamasaki, Ken'ichi, 4,564,878, Cl. 360-132.000.

Minolta Camera Kabuskiki Kaisha: *See—*
Miki, Yukio, 4,564,265, Cl. 350-255.000.

Mirsaiidi, Mohammad V.: *See—*
Geary, William C.; Mirsaiidi, Mohammad V.; Redfern, Timothy; and Wolfe, David W., 4,563,987, Cl. 123-179.00B.

Mitani, Masataka: *See—*
Okamoto, Futoshi; and Mitani, Masataka, 4,564,897, Cl. 363-132.000.

Mitchell, Cheryl R.; Mitchell, Pat R.; and Mitchell, William A. Confection products. 4,564,525, Cl. 426-104.000.

Mitchell, Pat R.: *See—*
Mitchell, Cheryl R.; Mitchell, Pat R.; and Mitchell, William A., 4,564,525, Cl. 426-104.000.

Mitchell, William A.: *See—*
Mitchell, Cheryl R.; Mitchell, Pat R.; and Mitchell, William A., 4,564,525, Cl. 426-104.000.

Mitono, Yoshiharu: *See—*
Tanizawa, Tetsu; Omichi, Hitoshi; and Mitono, Yoshiharu, 4,564,773, Cl. 307-445.000.

Mitsubishi Chemical Industries Limited: *See—*
Tabushi, Iwao; and Kobuke, Yoshiaki, 4,564,690, Cl. 549-352.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Awano, Toshiaki, 4,564,837, Cl. 340-825.300.
Hama, Hiroaki; Imanishi, Masami; and Tanaka, Naoki, 4,563,879, Cl. 62-160.000.
Hashimoto, Koosuke; and Gotoh, Motoyuki, 4,564,873, Cl. 360-90.000.
Iwaki, Yoshiyuki; Matsumoto, Akio; and Yokota, Mitsuyoshi, 4,564,799, Cl. 320-6.000.
Nakamura, Toshiyuki; Inaba, Tsutomu; and Kimura, Tadashi, 4,564,339, Cl. 417-366.000.
Nakamura, Toshiyuki; Sugihara, Masahiro; Inaba, Tsutomu; and Kimura, Tadashi, 4,564,343, Cl. 418-55.000.
Uozumi, Akira, 4,564,099, Cl. 198-323.000.
Yasuoka, Hirotoshi, 4,564,741, Cl. 219-125.100.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Kumagai, Naotake; and Tatemoto, Minoru, 4,564,215, Cl. 280-707.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Iida, Kozo; and Obayashi, Yoshiaki, 4,564,604, Cl. 502-64.000.

Mitsubishi Petrochemical Co., Ltd.: *See—*
Imanari, Makoto; Iwane, Hiroshi; and Sugawara, Takahiro, 4,564,713, Cl. 568-730.000.

Mitsubishi Rayon Co., Ltd.: *See—*
Kamata, Kazumasa; Ueda, Kazuo; and Kitai, Kiyokazu, 4,564,653, Cl. 525-67.000.

Mitsubishi Yuka Fine Chemicals Co., Ltd.: *See—*
Tani, Hideki; Arai, Makoto; Sasaki, Takayuki; Hayama, Kazuhide; and Yamashita, Akira, 4,564,560, Cl. 428-411.100.

Miura, Kiyoshi: *See—*
Morishita, Hajime; Miura, Kiyoshi; Sasaya, Osamu; and Nonogaki, Saburo, 4,564,572, Cl. 430-28.000.

Miura, Masami; and Kuwajima, Takeshi, to Nippon Electric Co., Ltd. Full-wave rectifier using an operational amplifier. 4,564,814, Cl. 328-26.000.
Miwa, Hirohide, to Fujitsu Limited. Method for measuring characteristics of living tissues by ultrasonic waves. 4,564,019, Cl. 128-660.000.
Mix, Raymond F.: *See*—
Hansen, William D.; and Mix, Raymond F., 4,564,251, Cl. 339-17.0CF.
Miyahara, Norio: *See*—
Nikaido, Tadanobu; Miyahara, Norio; and Tawara, Kanji, 4,564,926, Cl. 365-230.000.
Miyake, Shinichi: *See*—
Ueba, Yoshinobu; and Miyake, Shinichi, 4,564,263, Cl. 350-96.340.
Miyamoto, Shoji: *See*—
Mori, Kinji; Suzuki, Yasuo; Orimo, Masayuki; Miyamoto, Shoji; and Ihara, Hirokazu, 4,564,102, Cl. 198-341.000.
Miyano, Kazuyoshi, to Inoue-Japax Research Incorporated. TW-electroerosion machines with double-floating nozzle assemblies. 4,564,431, Cl. 204-224.00M.
Miyano, Seiji; Sumoto, Kunihiro; Morita, Minoru; and Sato, Fumio, to Suntory Ltd. 8-(Substituted N-phenylcarboxamidomethyl) pyrrolizidines and use thereof as antiarrhythmics. 4,564,624, Cl. 514-413.000.
Miyaoka, Takeo: *See*—
Nakazawa, Junichi; Hashimoto, Teruo; Kaneko, Masanao; and Miyaoka, Takeo, 4,564,676, Cl. 544-21.000.
Miyazaki, Hiroo; Shirai, Teruo; and Ogawa, Tsutomu, to Kabushiki Kaisha Miyano Tekkosho. Positive-locking indexing system for high-speed operation. 4,563,910, Cl. 74-820.000.
Miyazaki, Shu, to Sumitomo Metal Mining Co., Ltd. Method for making carrier tape. 4,564,582, Cl. 430-311.000.
Miyazaki, Takayuki: *See*—
Yasuda, Hiroshi; Kawashima, Kenichi; Miyazaki, Takayuki; and Kobayashi, Koichi, 4,564,764, Cl. 250-491.100.
Miyazaki, Tomio: *See*—
Yamaoka, Hideyuki; Hatano, Michiharu; Miyazaki, Tomio; Shimoda, Teruhisa; and Oki, Koji, 4,564,389, Cl. 75-38.000.
Miyazaki, Yoshifumi: *See*—
Nonoue, Torahiko; Moriki, Etsuzo; Miyazaki, Yoshifumi; Izawa, Takahal; Kikkawa, Shinichi; and Shiraki, Kenhachi, 4,564,288, Cl. 355-57.000.
Mizuno, Hiroyuki: *See*—
Matsuda, Hideaki; Tatezaki, Ryohta; Mizuno, Hiroyuki; and Katori, Tatsuhiko, 4,564,615, Cl. 514-231.000.
Mizuno, Masao: *See*—
Takigawa, Tetsuo; Ibata, Koichi; Okada, Masafumi; Mizuno, Masao; and Nishida, Takashi, 4,564,477, Cl. 260-405.500.
Mobil Oil Corporation: *See*—
Chang, Clarence D.; and Miale, Joseph N., 4,564,719, Cl. 585-640.000.
Garwood, William E.; Starr, William C.; and Walker, John W., 4,564,440, Cl. 208-87.000.
Touhsaent, Robert E.; Wagner, John R., Jr.; and Clauson, Melvil B., 4,564,558, Cl. 428-349.000.
Wagner, John R., Jr.; and Clauson, Melvil B., 4,564,559, Cl. 428-349.000.
Mogi, Shinobu: *See*—
Morinaga, Masaru; and Mogi, Shinobu, 4,564,153, Cl. 242-107.000.
Molnlycke AB: *See*—
Widlund, Leif U. R.; Nedestam, Stefan; and Froidh, Arne, 4,564,108, Cl. 206-438.000.
Momose, Yutaka, to Aisin Seiki Kabushiki Kaisha. Seal for piston rod of Stirling engine. 4,564,202, Cl. 277-3.000.
Monitrol, Inc.: *See*—
Price, Robert G., 4,563,974, Cl. 118-66.000.
Monroe Auto Equipment Company: *See*—
Bethell, Michael R.; Gaines, Michael G.; Mowat, James F., Jr.; Wheeler, Roger D.; and Woidke, Richard P., 4,564,138, Cl. 228-176.000.
Monsanto Company: *See*—
Coleman, James P.; and McMackins, Dudley E., 4,564,689, Cl. 549-326.000.
Kocatas, Babur M., 4,564,377, Cl. 55-488.000.
Montgomery, Douglas J.; Goldstein, Leonard H.; and Stumbo, Ernest, to Doleer Electronics, Inc. Apparatus and method for domestic hot water control. 4,564,141, Cl. 236-20.00R.
Montgomery, Robert E.: *See*—
Pellico, Michael A.; and Montgomery, Robert E., 4,564,519, Cl. 424-48.000.
Moon, Edward E., to Acco Babcock Inc. Carrier conveyor system. 4,564,100, Cl. 198-341.000.
Moore, Arthur I. W., to Production Engineering Research Assoc. Apparatus for monitoring tool life. 4,563,897, Cl. 73-587.000.
Moore, Cecil A.; and Langford, Gordon B., to Koala Technologies Corporation. Digitizer pad. 4,564,079, Cl. 178-18.000.
Moorehead, Eric L.: *See*—
Robinson, Paul R.; and Moorehead, Eric L., 4,564,603, Cl. 502-60.000.
Moosberg, Borje S.; and Karlsson, Jarding U., to Abu Aktiebolag. Fishing reel clutch release mechanism. 4,564,158, Cl. 242-220.000.
Morcheles, Bernard, to Stacor Corporation. Portable light box. 4,564,886, Cl. 362-97.000.
Morgan, Glenn E., Sr.: *See*—
Garabedian, Michael E.; and Morgan, Glenn E., Sr., 4,564,127, Cl. 222-96.000.
Mori, Hirotaro; and Fujita, Hiroshi, to Osaka University. Method for producing amorphous metals. 4,564,395, Cl. 148-4.000.
Mori, Kinji; Suzuki, Yasuo; Orimo, Masayuki; Miyamoto, Shoji; and Ihara, Hirokazu, to Hitachi, Ltd. Method and apparatus for transportation of materials. 4,564,102, Cl. 198-341.000.
Mori, Shunji: *See*—
Hiraoka, Masakatsu; Tsumura, Kazushi; Baba, Kenji; Nogita, Shunsuke; and Mori, Shunji, 4,564,444, Cl. 210-96.100.
Moriki, Etsuzo: *See*—
Nonoue, Torahiko; Moriki, Etsuzo; Miyazaki, Yoshifumi; Izawa, Takahal; Kikkawa, Shinichi; and Shiraki, Kenhachi, 4,564,288, Cl. 355-57.000.
Morin, Francois: *See*—
Coissard, Pierre; Richard, Joseph; and Morin, Francois, 4,563,806, Cl. 29-571.000.
Morinaga, Masaru; and Mogi, Shinobu, to NSK-Warner K.K. Retractor. 4,564,153, Cl. 242-107.000.
Morishige, Norio; and Kume, Ryoichi, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Method for preventing disbonding of weld-cladding. 4,564,402, Cl. 148-127.000.
Morishita, Hajime; Miura, Kiyoshi; Sasaya, Osamu; and Nonogaki, Saburo, to Hitachi, Ltd. Process for forming pattern. 4,564,572, Cl. 430-28.000.
Morita, Hideaki; Kasuya, Takahira; Yamakawa, Goichi; Tomono, Makoto; Furuta, Isao; and Tsuneyoshi, Minoru, to Konishiroku Photo Industry Co., Ltd.; and Japan Synthetic Rubber Co., Ltd. Electrostatic image forming toner. 4,564,573, Cl. 430-109.000.
Morita, Masao; Tanaka, Akinobu; Imamura, Saburo; Tamamura, Toshiaki; and Kogure, Osamu, to Nippon Telegraph & Telephone Public Corporation. Pattern forming material of a siloxane polymer. 4,564,579, Cl. 430-270.000.
Morita, Minoru: *See*—
Miyano, Seiji; Sumoto, Kunihiro; Morita, Minoru; and Sato, Fumio, 4,564,624, Cl. 514-413.000.
Moriyama, Hitoshi: *See*—
Koyama, Yuichiro; Nakazawa, Hiroshi; Yamashita, Toshiaki; and Moriyama, Hitoshi, 4,564,709, Cl. 568-26.000.
Morton, Bernard W.; and Olseth, Bruce K., to DRI STEEM Humidifier Company. Steam humidifier cabinet construction. 4,564,746, Cl. 219-276.000.
Mostek Corporation: *See*—
Briggs, Willard S., 4,564,920, Cl. 364-757.000.
Motorola, Inc.: *See*—
Christ, Allen E.; and Roche, Thomas A., 4,564,880, Cl. 361-212.000.
Jones, Timothy R., 4,564,818, Cl. 330-311.000.
Reichart, Elwood C., 4,564,821, Cl. 331-74.000.
Mouri, Yasunori; and Abe, Osamu, to Hitachi, Ltd. Electronic control apparatus for internal combustion engine. 4,564,907, Cl. 364-431.100.
Mowat, James F., Jr.: *See*—
Bethell, Michael R.; Gaines, Michael G.; Mowat, James F., Jr.; Wheeler, Roger D.; and Woidke, Richard P., 4,564,138, Cl. 228-176.000.
Mueller, Herbert, to BASF Aktiengesellschaft. Continuous preparation of polyoxybutylene polyoxyalkylene glycols. 4,564,671, Cl. 528-416.000.
Mueller, Robert S., to Eaton Corporation. Supercharger with reduced noise. 4,564,345, Cl. 418-206.000.
Mukoh, Akio: *See*—
Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.
Muller, Arno, to Pitney Bowes Inc. Postage meter with power-failure resistant memory. 4,564,922, Cl. 364-900.000.
Muller, Hans, to Heidelberger Druckmaschinen AG. Folding apparatus for a web-fed rotary printing machine. 4,564,183, Cl. 270-21.100.
Muller, Rolf: *See*—
Kussmaul, Ulrich; Becherer, Johannes; Handte, Reinhard; and Muller, Rolf, 4,564,682, Cl. 548-169.000.
Muller, Walter: *See*—
Rolf, Meinhard; Neeff, Rutger; Muller, Walter; and Hederich, Volker, 4,564,680, Cl. 546-155.000.
Muller, Werner: *See*—
Ackermann, Gustav; Clostermeyer, Gerhard; and Muller, Werner, 4,563,854, Cl. 53-118.000.
Mullich, Richard O.; and Rotondi, Anthony J., to TRE Corporation. Latch assembly having selectable backset distance. 4,564,229, Cl. 292-169.130.
Munday, William A.: *See*—
LaRue, Gayle M.; and Munday, William A., 4,564,351, Cl. 425-383.000.
Munk, Evelyn; and Munk, Michael. Humidification apparatus. 4,564,375, Cl. 55-259.000.
Munk, Michael: *See*—
Munk, Evelyn; and Munk, Michael, 4,564,375, Cl. 55-259.000.
Munoz Saiz, Manuel. System for utilizing the energy of waves. 4,564,312, Cl. 405-76.000.
Munzer, Rudolf: *See*—
Gupta, Ashok K.; Gyarmati, Erno ; Kreutz, Hermann; Munzer, Rudolf; Naoumidis, Aristides; and Nickel, Hubertus, 4,564,496, Cl. 264-44.000.
Murakami Screen Kabushiki Kaisha: *See*—
Ichimura, Kunihiro; Yamaoka, Tsuguo; Kaneda, Sadayoshi; and Shibuya, Toru, 4,564,580, Cl. 430-281.000.
Murakami, Tamotsu, to Shizuoka Kogyo Company, Ltd. Sheet splicer. 4,564,413, Cl. 156-504.000.

Murakami, Yutaka: *See*—
Ohhashi, Tateo; Kawamoto, Hideyuki; and Murakami, Yutaka, 4,564,392, Cl. 75-128.00V.
Murata Kikai Kabushiki Kaisha: *See*—
Noshi, Shinji, 4,564,123, Cl. 221-11.000.
Murata Manufacturing Co., Ltd.: *See*—
Nakazawa, Yasuyuki; and Kato, Yoshiharu, 4,564,602, Cl. 501-137.000.
Ogawa, Toshio, 4,564,782, Cl. 310-359.000.
Takahashi, Hiroyuki; and Yamamoto, Takashi, 4,564,825, Cl. 333-191.000.
Murck, James W. Flanged duct joint utilizing snap-in corner pieces. 4,564,227, Cl. 285-364.000.
Murphy, Richard D.: *See*—
Clelford, Douglas H.; Skonieczny, Joseph P.; and Murphy, Richard D., 4,564,908, Cl. 364-433.000.
Murray, Peter; and Slinn, David, to Shieldalloy Corporation. Introducing one or more metals into a melt comprising aluminum. 4,564,393, Cl. 75-256.000.
Muschaweck, Roman; Fulberth, Werner; and Sickmuller, Alfred, to Hoechst Aktiengesellschaft. Binary compositions of penbutolol and furosemide or piretanide. 4,564,625, Cl. 514-429.000.
Muskulus, Willi. Bound-stators or rotors for electrical machines. 4,563,962, Cl. 112-262.100.
Myrman, Nicholas M., to Sunkist Growers, Inc. Method, apparatus and product for illuminating a surface to provide a desired light intensity at discrete points on said surface. 4,564,893, Cl. 362-311.000.
Nagahira, Jyoji: *See*—
Suzuki, Koji; Kuroda, Kouki; and Nagahira, Jyoji, 4,564,287, Cl. 355-14.00D.
Nagai, Hiroshi; and Kanno, Yoshinori, to Nanao Kogyo Co., Ltd. Apparatus for recovering metals dissolved in a solution. 4,564,432, Cl. 204-237.000.
Nagami, Kazuyoshi: *See*—
Tanaka, Tatsuyoshi; Nagami, Kazuyoshi; Tamada, Shigeharu; and Nakagawa, Kazuyuki, 4,564,619, Cl. 514-312.000.
Nagano, Masanobu: *See*—
Ueda, Ikuo; Nagano, Masanobu; and Akahane, Atsushi, 4,564,621, Cl. 514-357.000.
Nagasawa, Takeshi: *See*—
Kuroiwa, Katsumasa; Nakatsuyama, Shuichi; and Nagasawa, Takeshi, 4,564,695, Cl. 560-13.000.
Nagase, Hiroshi; and Sato, Yasuo, to Takeda Chemical Industries, Ltd. N-(2,6-Difluorobenzoyl-N-'-(2-fluoro-4-halophenyl)urea. 4,564,639, Cl. 514-594.000.
Nagase, Hiroshi: *See*—
Ohno, Kiyotaka; Nagase, Hiroshi; Ishikawa, Mamoru; Matsumoto, Kazuhisa; and Nishio, Shintaro, 4,564,620, Cl. 514-337.000.
Nagata, Kunio: *See*—
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Nagata, Tomihiko: *See*—
Yamada, Motokazu; Hayakawa, Hideyuki; Fukui, Tomonori; Matsuhashi, Hajime; Kaneko, Yasuhiro; Ikeda, Motozo; and Nagata, Tomihiko, 4,564,917, Cl. 364-565.000.
Nagel, Erich, to Agfa-Gevaert Aktiengesellschaft. Apparatus for transporting developed disc films in copying machines. 4,564,101, Cl. 198-346.200.
Nagy, Charles S.: *See*—
Granzow, Robert H.; Placke, Dale L.; McMorrow, Harold L.; and Nagy, Charles S., 4,564,122, Cl. 221-12.000.
Nagy, Lajos: *See*—
Ecsery, Zoltan; Somfai, Eva; Hermann nee Voros, Judit; Nagy, Lajos; Szabo, Gabor; Orban, Otto; and Arvai, Laslzo, 4,564,706, Cl. 564-376.000.
Naito, Michinori, to Trio Kabushiki Kaisha. FM Demodulator PLL with compensation for nonlinear varactor characteristics. 4,564,815, Cl. 329-50.000.
Naito, Shotaro: *See*—
Masuda, Mitsuhiro; Naito, Shotaro; Tokuyama, Keiichi; and Watanabe, Shizuhisa, 4,564,905, Cl. 364-424.000.
Naitoh, Zenjiro: *See*—
Ohgami, Tadashi; Naitoh, Zenjiro; Saotome, Haruo; Takekoshi, Kenji; and Saitoh, Kimio, 4,564,531, Cl. 426-589.000.
Nakagawa, Kazuyuki: *See*—
Tanaka, Tatsuyoshi; Nagami, Kazuyoshi; Tamada, Shigeharu; and Nakagawa, Kazuyuki, 4,564,619, Cl. 514-312.000.
Nakahata, Kimio: *See*—
Nakamura, Shunji; Kan, Fumitaka; Egami, Hidemi; Hosoi, Atsushi; Tajima, Hatsuo; and Nakahata, Kimio, 4,563,978, Cl. 118-658.000.
Nakai, Yasushi: *See*—
Fujino, Yoshiharu; Kawai, Hajime; Nakai, Yasushi; and Tsunemitsu, Katsuhiko, 4,564,679, Cl. 546-116.000.
Nakajima, Tohru, to Universal Pioneer Corporation. Video disc recording and reproducing device for video discs having recognition signal indicative of content of associated program signal. 4,564,867, Cl. 358-342.000.
Nakamichi, Toshihiro: *See*—
Katsuhara, Yutaka; Nakamichi, Toshihiro; Kawai, Toshikazu; and Nakazora, Toru, 4,564,716, Cl. 568-842.000.
Nakamura, Kenichi, to Kabushiki Kaisha Toshiba. Ultrasonic imaging apparatus using transducer control. 4,563,899, Cl. 73-626.000.
Nakamura, Shunji; Kan, Fumitaka; Egami, Hidemi; Hosoi, Atsushi; Tajima, Hatsuo; and Nakahata, Kimio, to Canon Kabushiki Kaisha. Developing apparatus. 4,563,978, Cl. 118-658.000.
Nakamura, Takaharu: *See*—
Sugimoto, Hachiro; Nakamura, Takaharu; Hamazo, Sachiyuki; and Daiku, Yoshiharu, 4,564,617, Cl. 514-265.000.
Nakamura, Toshiyuki; Inaba, Tsutomu; and Kimura, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Scroll compressor. 4,564,339, Cl. 417-366.000.
Nakamura, Toshiyuki; Sugihara, Masahiro; Inaba, Tsutomu; and Kimura, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Scroll compressor having improved sealing. 4,564,343, Cl. 418-55.000.
Nakamura, Yasuo, to Sanden Corporation. Method of making a clutch rotor for an electromagnetic clutch. 4,564,137, Cl. 228-173.600.
Nakanishi, Michio: *See*—
Masaichiro, Masui, 4,564,475, Cl. 260-398.500.
Nakano, Harumi, to Casio Computer Co., Ltd. Interconnectable electronic game apparatus. 4,564,923, Cl. 364-900.000.
Nakano, Jiro: *See*—
Akatsuka, Takao; Nakano, Jiro; Ishibashi, Takao; and Kawaguchi, Masao, 4,563,991, Cl. 123-440.000.
Nakano, Keiichi, to Kubota Ltd. Splash lubricated over head valve engine. 4,563,986, Cl. 123-90.380.
Nakano, Takao: *See*—
Sato, Hiroki; Natori, Takehisa; and Nakano, Takao, 4,564,785, Cl. 313-422.000.
Nakatsuyama, Shuichi: *See*—
Kuroiwa, Katsumasa; Nakatsuyama, Shuichi; and Nagasawa, Takeshi, 4,564,695, Cl. 560-13.000.
Nakayama, Motoichi: *See*—
Takahashi, Mikio; and Nakayama, Motoichi, 4,564,088, Cl. 188-67.000.
Nakayama, Yasunobu; Sato, Yasuji; and Shibata, Shinichi, to Kabushiki Kaisha Toshiba. Terminal interface connecting terminal unit having central office line interface to key telephone system. 4,564,724, Cl. 179-2.00A.
Nakazawa, Hiroshi: *See*—
Koyama, Yuichiro; Nakazawa, Hiroshi; Yamashita, Toshiaki; and Moriyama, Hitoshi, 4,564,709, Cl. 568-26.000.
Nakazawa, Junichi; Hashimoto, Teruo; Kaneko, Masanao; and Miyaoka, Takeo, to Sankyo Company Limited. Process for preparing cephalosporin derivatives. 4,564,676, Cl. 544-21.000.
Nakazawa, Yasuyuki; and Kato, Yoshiharu, to Murata Manufacturing Co., Ltd. High permittivity ceramic composition. 4,564,602, Cl. 501-137.000.
Nakazora, Toru: *See*—
Katsuhara, Yutaka; Nakamichi, Toshihiro; Kawai, Toshikazu; and Nakazora, Toru, 4,564,716, Cl. 568-842.000.
Nakazyo, Kiyoshi: *See*—
Aoki, Kozo; Ono, Michio; and Nakazyo, Kiyoshi, 4,564,586, Cl. 430-505.000.
Nalco Chemical Company: *See*—
Wang, Sophia; and Millard, Alan A., 4,564,438, Cl. 208-33.000.
Nally, Robert B.: *See*—
Lepic, Daniel A.; and Nally, Robert B., 4,564,752, Cl. 235-437.000.
Nanao Kogyo Co., Ltd.: *See*—
Nagai, Hiroshi; and Kanno, Yoshinori, 4,564,432, Cl. 204-237.000.
Naoumidis, Aristides: *See*—
Gupta, Ashok K.; Gyarmati, Erno ; Kreutz, Hermann; Munzer, Rudolf; Naoumidis, Aristides; and Nickel, Hubertus, 4,564,496, Cl. 264-44.000.
Narasimhan, Kalatur S. V. L.; and Preusch, Charles D., to Crucible Materials Corporation. Method of improving magnets. 4,564,400, Cl. 148-103.000.
Narasimhan, Kalatur S. V. L.: *See*—
Strichman, George A.; Dulis, Edward J.; Narasimhan, Kalatur S. V. L.; and Lizzi, Thomas, 4,564,401, Cl. 148-104.000.
NAT Shipping Bagging Services Limited: *See*—
Van Der Wal, Jan; and Nederpel, Gerardus L., 4,563,858, Cl. 53-418.000.
National Gypsum Company: *See*—
Burkard, Edward A.; and Segada, James J., 4,564,544, Cl. 428-70.000.
National Research Development Corp.: *See*—
Coombs, Richard R. H.; and El-Saba, Mekki M., 4,564,007, Cl. 128-92.00A.
Jones, Terence R.; Harrap, Kenneth R.; and Calvert, Alan H., 4,564,616, Cl. 514-260.000.
Natori, Takehisa: *See*—
Sato, Hiroki; Natori, Takehisa; and Nakano, Takao, 4,564,785, Cl. 313-422.000.
Natsuume, Tadao: *See*—
Ueda, Tsunehisa; and Natsuume, Tadao, 4,564,371, Cl. 44-51.000.
Nause, Earl E.: *See*—
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,564,446, Cl. 210-167.000.
Nava & C. S.p.A.: *See*—
Tesser, Igino, 4,563,825, Cl. 36-131.000.
NCR Canada Ltd - NCR Canada Ltee: *See*—
Lepic, Daniel A.; and Nally, Robert B., 4,564,752, Cl. 235-437.000.
NCR Corporation: *See*—
Boulogne, Gerardus F.; and van Berkel, Bernardus P. J., 4,564,838, Cl. 340-825.500.
Granzow, Robert H.; Placke, Dale L.; McMorrow, Harold L.; and Nagy, Charles S., 4,564,122, Cl. 221-12.000.
Nederpel, Gerardus L.: *See*—
Van Der Wal, Jan; and Nederpel, Gerardus L., 4,563,858, Cl. 53-418.000.

Nedestam, Stefan: *See—*
Widlund, Leif U. R.; Nedestam, Stefan; and Froidh, Arne, 4,564,108, Cl. 206-438.000.
Neefe, Charles W. Production of soft lenses having reduced spherical aberrations. 4,564,484, Cl. 264-2.600.
Neeff, Rutger: *See—*
Rolf, Meinhard; Neeff, Rutger; Muller, Walter; and Hederich, Volker, 4,564,680, Cl. 546-155.000.
Neidell, Norman S. Navigational systems using phase encoded angular coordinates. 4,564,841, Cl. 343-386.000.
Nel, Gert, to Eastway Holdings Limited. Electrical machine having a quickly releasable stator. 4,564,780, Cl. 310-258.000.
Nelipa, Ljudmila N.: *See—*
Busse-Machukas, Vladimir B.; Lvovich, Florenty I.; Spasskaya, Evdokia K.; Kubasov, Vladimir L.; Mazanko, Anatoly F.; Druzhinin, Ernest A.; Martynov, Alexandr N.; and Nelipa, Ljudmila N., 4,564,434, Cl. 204-290.00F.
Nellis, Walter E.: *See—*
Gritters, Gregory A.; Nellis, Walter E.; and Featherstone, John L., 4,564,298, Cl. 366-167.000.
Nelson, Leonard: *See—*
Barresi, Anthony J.; and Nelson, Leonard, 4,564,135, Cl. 228-6.200.
Nelson Research & Development Co.: *See—*
Horn, Alan S., 4,564,628, Cl. 514-438.000.
Neri, Carlo; Giroldini, William; Rinaldi, Antonio; Traversoni, Mario; and Clerici, Mario, to Enichimica Secondaria S.p.A. Process for preparing substituted 2,3-dihydrobenzofuran. 4,564,691, Cl. 549-462.000.
Nestec S. A.: *See—*
Hugelshofer, Alison, 4,564,530, Cl. 426-575.000.
Nestor, Charles R.: *See—*
Garretson, Jay H.; Lazor, Thomas E.; Merva, John J.; Nestor, Charles R.; Plyler, Robert G.; Seiffert, Raymond C.; and Ziegler, Jeffrey L., 4,564,258, Cl. 339-220.00R.
Neumann, Hans-Jurgen: *See—*
Weber, Wolfram; Neumann, Hans-Jurgen; Meisberger, Artur; and Mathieu, Bernd, 4,564,342, Cl. 417-477.000.
Neumann, Kurt, to Peters, Claudius. Disengageable rotary clutch. 4,564,096, Cl. 192-67.00R.
Neves, Alan M., to Biomass International Inc. Alcohol manufacturing process. 4,564,595, Cl. 435-163.000.
New York Institute of Technology: *See—*
Glenn, William E.; and Marcinka, John W., 4,564,928, Cl. 367-117.000.
Halioua, Maurice, 4,564,295, Cl. 356-376.000.
Newson, Stephen R.: *See—*
Guyette, Richard R.; Hall, Eddie T.; Meritt, Allan S.; Newson, Stephen R.; Scalzi, Casper A.; and Sears, Glenn W., Jr., 4,564,903, Cl. 364-300.000.
Newton, Roger F.: *See—*
Scopes, David I. C.; Newton, Roger F.; and Cookson, Richard C., 4,564,618, Cl. 514-274.000.
Newton, Steven A.; Shaw, Herbert J.; and Cutler, Cassius C., to Leland Stanford Junior University, Board of Trustees of the. Fiber optic loop interferometer and method with coincident backscatter elimination. 4,564,293, Cl. 356-350.000.
Nickel, Hubertus: *See—*
Gupta, Ashok K.; Gyarmati, Erno ; Kreutz, Hermann; Munzer, Rudolf; Naoumidis, Aristides; and Nickel, Hubertus, 4,564,496, Cl. 264-44.000.
Nicklas, Alexander: *See—*
Hergt, Peter; Nicklas, Alexander; and Becker, Karl-Heinz, 4,564,334, Cl. 415-199.300.
Nicolon Corporation: *See—*
Scales, John M., 4,564,311, Cl. 405-20.000.
Niedecker, Herbert. Process of manufacturing tubular wrappers from a continuous web of plastic material sheeting. 4,563,792, Cl. 17-33.000.
Nihon Medi-Physics Co., Ltd.: *See—*
Ueda, Nobuo; Kondo, Susumu; and Hazue, Masaaki, 4,564,472, Cl. 260-113.000.
Nihon Nohyaku Co., Ltd.: *See—*
Hokazono, Akio; and Sugimoto, Tatsuyoshi, 4,564,627, Cl. 514-430.000.
Nihon Tokushu Boyaku Seizo K.K.: *See—*
Yamada, Yasuo; Saito, Junichi; Tamura, Tatsuo; and Sakawa, Shinji, 4,564,638, Cl. 514-585.000.
Nijhof, Berend J.: *See—*
Welzen, Jozef T. A. M.; Stijntjes, Theodorus G. W.; van der Meer, Aant B. D.; Lobel, Rudolf O. M.; and Nijhof, Berend J., 4,564,489, Cl. 264-58.000.
Nikaido, Tadanobu; Miyahara, Norio; and Tawara, Kanji, to Nippon Telegraph & Telephone Public Corporation. Information memory device with address multiplexing. 4,564,926, Cl. 365-230.000.
Nilsson, Kenth; and Bolmgren, Jan, to Siemens Aktiengesellschaft. Recording device functioning with fluid droplets. 4,564,851, Cl. 346-140.00R.
Nilsson, Torsten; and Jakobsen, Kjell M., to PLM AB. Method of producing a container. 4,564,495, Cl. 264-291.000.
Nippon Alumi Tsurmuraru Corp. Co., The: *See—*
Maeda, Tsuneo, 4,564,001, Cl. 126-390.000.
Nippon Aluminium Mfg. Co., Ltd., The: *See—*
Maeda, Tsuneo, 4,564,001, Cl. 126-390.000.
Nippon Electric Co., Ltd.: *See—*
Miura, Masami; and Kuwajima, Takeshi, 4,564,814, Cl. 328-26.000.
Nippon Kayaku Kabushiki Kaisha: *See—*
Kurabayashi, Katsuhiko; Kinoshita, Hidefumi; Saito, Hitoshi; and Takahashi, Toshio, 4,564,675, Cl. 536-18.100.
Nippon Kogaku K.K.: *See—*
Takemae, Mikio; Watanabe, Sakuji; and Okubo, Yuji, 4,564,281, Cl. 354-442.000.
Uehara, Makoto, 4,564,269, Cl. 350-432.000.
Utagawa, Ken, 4,564,919, Cl. 364-728.000.
Nippon Light Metal Co., Ltd.: *See—*
Tsuge, Mitsuo; Kohmura, Shigeru; Sugiyama, Keiichi; Saitoh, Hisao; and Saitoh, Shigenori, 4,564,119, Cl. 220-270.000.
Nippon Mektron, Ltd.: *See—*
Inoue, Kazuo, 4,564,832, Cl. 340-365.00R.
Nippon Piston Ring Co., Ltd.: *See—*
Sakamaki, Hiroshi; Sugishita, Susumu; and Horikoshi, Yukio, 4,564,344, Cl. 418-173.000.
Nippon Shokubai Kagaku Kogyo Co. Ltd.: *See—*
Yoneda, Tadahiro; and Ueshima, Michio, 4,564,607, Cl. 502-209.000.
Nippon Telegraph & Telephone Public Corporation: *See—*
Morita, Masao; Tanaka, Akinobu; Imamura, Saburo; Tamamura, Toshiaki; and Kogure, Osamu, 4,564,579, Cl. 430-270.000.
Nikaido, Tadanobu; Miyahara, Norio; and Tawara, Kanji, 4,564,926, Cl. 365-230.000.
Nippon Zeon Co Ltd: *See—*
Ueda, Tsunehisa; and Natsuume, Tadao, 4,564,371, Cl. 44-51.000.
Nippon Zeon Co., Ltd.: *See—*
Yamamoto, Haruhisa; and Akiyama, Shinichi, 4,564,703, Cl. 562-534.000.
Nippondenso Co., Ltd.: *See—*
Hori, Shinichi; Ohnishi, Yasuichi; Ueda, Masahiro; and Noba, Masahiko, 4,564,916, Cl. 364-551.000.
Yamada, Motokazu; Hayakawa, Hideyuki; Fukui, Tomonori; Matsuhashi, Hajime; Kaneko, Yasuhiro; Ikeda, Motozo; and Nagata, Tomihiko, 4,564,917, Cl. 364-565.000.
Nishida, Takashi: *See—*
Takigawa, Tetsuo; Ibata, Koichi; Okada, Masafumi; Mizuno, Masao; and Nishida, Takashi, 4,564,477, Cl. 260-405.500.
N..higaki, Hisashi; and Aimono, Yuji, to Hitachi Chemical Company, Ltd. Light- and thermosetting resin composition and insulated electrical machinery and appliances using the same. 4,564,646, Cl. 522-13.000.
Nishijima, Toyoki: *See—*
Sasaki, Masao; Nishijima, Toyoki; Takada, Shun; Kadowaki, Takashi; and Onodera, Kaoru, 4,564,590, Cl. 430-551.000.
Nishikawa, Kohei: *See—*
Sugihara, Hirosada; Nishikawa, Kohei; and Ito, Katsumi, 4,564,612, Cl. 514-211.000.
Nishikubo, Toshihiko; and Shimizu, Kazuo, to Sanyo Kokusaku Pulp Co., Ltd. Rapidly curable acrylic adhesive compositions for bonding polypropylene. 4,564,657, Cl. 525-158.000.
Nishimoto, Yoshifumi, to Canon Kabushiki Kaisha. Variable-focal-length lens. 4,564,267, Cl. 350-379.000.
Nishimura, Kosuke: *See—*
Nittaya, Hiroshi; and Nishimura, Kosuke, 4,564,954, Cl. 381-51.000.
Nishio, Shintaro: *See—*
Ohno, Kiyotaka; Nagase, Hiroshi; Ishikawa, Mamoru; Matsumoto, Kazuhisa; and Nishio, Shintaro, 4,564,620, Cl. 514-337.000.
Nising, Wolfgang: *See—*
Serini, Volker; Lindner, Christian; Peters, Horst; and Nising, Wolfgang, 4,564,654, Cl. 525-67.000.
Nissan Motor Co., Ltd.: *See—*
Hayashi, Yoshimasa; and Itoh, Yoji, 4,563,983, Cl. 123-41.210.
Kato, Shinichi; Tamura, Takeshi; Ambo, Tsugio; and Shimazawa, Katsuji, 4,564,252, Cl. 339-91.00R.
Seko, Yasutoshi; and Yanagishima, Takayuki, 4,564,833, Cl. 340-576.000.
Sugano, Kazuhiko, 4,563,918, Cl. 74-869.000.
Takehara, Shin; and Tabata, Toshiyuki, 4,564,082, Cl. 180-312.000.
Tanaka, Toshiaki, 4,564,341, Cl. 417-462.000.
Niswander, Robert L.; and Cornwell, Tomy W., to Hyway Concrete Pipe Company. Rectilinear culvert structure. 4,564,313, Cl. 405-125.000.
Nitsuko Limited: *See—*
Ibata, Kazuo, 4,564,726, Cl. 179-99.00M.
Takahashi, Kenichi, 4,564,936, Cl. 370-58.000.
Nittaya, Hiroshi; and Nishimura, Kosuke, to Sharp Kabushiki Kaisha. Noise reduction circuit of synthetic speech generating apparatus. 4,564,954, Cl. 381-51.000.
Nitto Boseki Co., Ltd.: *See—*
Kuroiwa, Katsumasa; Nakatsuyama, Shuichi; and Nagasawa, Takeshi, 4,564,695, Cl. 560-13.000.
Niven, Jeffrey E.: *See—*
LaBudde, Edward V.; Niven, Jeffrey E.; Hsieh, Der-Chang; Parker, Roger C.; and Johnson, Robert Jeffery, 4,564,757, Cl. 250-239.000.
Niwa, Toshio; Himeno, Kiyoshi; and Maeda, Shuichi, to Research Association Of Synthetic Dyestuffs. 3-Cyano-5-nitrothiophene anilino monoazo dye for synthetic fibers. 4,564,673, Cl. 534-794.000.
Noba, Masahiko: *See—*
Hori, Shinichi; Ohnishi, Yasuichi; Ueda, Masahiro; and Noba, Masahiko, 4,564,916, Cl. 364-551.000.
Nobutoki, Saburo: *See—*
Ishioka, Sachio; Imamura, Yoshinori; Hirai, Tadaaki; Nobutoki, Saburo; and Maruyama, Akio, 4,564,784, Cl. 313-384.000.

Nogita, Shunsuke: *See*—
Hiraoka, Masakatsu; Tsumura, Kazushi; Baba, Kenji; Nogita, Shunsuke; and Mori, Shunji, 4,564,444, Cl. 210-96.100.

Noguchi, Masaru; Horikawa, Kazuo; and Ohga, Akihiro, to Fuji Photo Film Co., Ltd. Radiation image read-out apparatus. 4,564,760, Cl. 250-327.200.

Nohava, Thomas E.; and Schmit, Joseph L., to Honeywell Inc. Encapsulant of CdTe boules for multiblade wafering. 4,564,494, Cl. 264-275.000.

Noll, Harry C., Jr., to Harris Graphics Corporation. Articulating sheet material conveyor. 4,564,189, Cl. 271-201.000.

Noma, Keizi: *See*—
Senoo, Masaharu; Noma, Keizi; Saruta, Akira; Yoshizaki, Masanori; Teshirogi, Koichi; and Yaegashi, Kouei, 4,564,777, Cl. 310-156.000.

Nonaka, Yuji: *See*—
Sugiyama, Katsumi; Takeda, Hideo; Sato, Hiroko; Nonaka, Yuji; Oyama, Kiyotaka; and Kubo, Masashige, 4,564,471, Cl. 260-112.50K.

Nonn, Konrad; Wolf, Karlheinz; Haas, Johannes; and Paulat, Volker, to Bayer Aktiengesellschaft. Insecticidal and acaricidal agents and their use. 4,564,632, Cl. 514-522.000.

Nonogaki, Saburo: *See*—
Morishita, Hajime; Miura, Kiyoshi; Sasaya, Osamu; and Nonogaki, Saburo, 4,564,572, Cl. 430-28.000.

Nonoue, Torahiko; Moriki, Etsuzo; Miyazaki, Yoshifumi; Izawa, Takahal; Kikkawa, Shinichi; and Shiraki, Kenhachi, to Sanyo Electric Co., Ltd. Electrostatic recording apparatus. 4,564,288, Cl. 355-57.000.

Nordin, Jerry K. G., to Telkefonaktiebolaget LM Ericsson. Contacting device for protecting electronic components against electromagnetic radiation. 4,564,722, Cl. 174-35.0GC.

Nordlund, Sven, to WM Regler AB. Fluid actuator for stepwise regulation of valves. 4,564,169, Cl. 251-58.000.

Norse Instruments, Inc.: *See*—
Link, William T., 4,564,020, Cl. 128-677.000.

North American Philips Consumer Electronics Corp.: *See*—
Baum, Steven A.; Gallaro, Anthony V.; Hovey, Frederick A.; Rehkopf, Charles H.; and Sember, William J., 4,564,786, Cl. 313-479.000.

Northeast Semiconductor Inc.: *See*—
Shealy, James R.; and Eastman, Lester F., 4,564,509, Cl. 423-210.500.

Norton, Charles J., to Marathon Oil Company. Hydrocarbon recovery process using an in situ silicate/polymer gel. 4,564,070, Cl. 166-295.000.

Noshi, Shinji, to Murata Kikai Kabushiki Kaisha. Magazine driving device in paper tube releasing apparatus. 4,564,123, Cl. 221-11.000.

Nowak, Michael: *See*—
Knop, Hans-Georg; Nowak, Michael; Redecker, Friedrich; and Tiede, Ralf, 4,564,859, Cl. 358-75.000.

NRC Corporation: *See*—
Saigo, Kazuhide; and Suzuki, Masayoshi, 4,564,576, Cl. 430-197.000.

NSK-Warner K. K.: *See*—
Kawai, Osamu, 4,563,797, Cl. 24-641.000.
Tsukamoto, Masahiro, 4,564,155, Cl. 242-107.40A.

NSK-Warner K.K.: *See*—
Morinaga, Masaru; and Mogi, Shinobu, 4,564,153, Cl. 242-107.000.
Yokote, Yoshihiro; and Yamamoto, Kazuo, 4,564,218, Cl. 280-804.000.

Nukem GmbH: *See*—
Huschelrath, Gerhard; Abend, Klaus; and Orthen, Ursula, 4,564,809, Cl. 324-225.000.

Nusser, Martin: *See*—
Wistuba, Eberhard; Nusser, Martin; and Lenzer, Xaver, 4,563,866, Cl. 56-228.000.

N.V. Weefautomaten Picanol: *See*—
van Bogaert, Philippe, 4,564,053, Cl. 139-449.000.

Obayashi, Yoshiaki: *See*—
Iida, Kozo; and Obayashi, Yoshiaki, 4,564,604, Cl. 502-64.000.

Oberdorf, Manfred, to Maschinenfabrik Alfred Schmermund GmbH & Co. Method of and apparatus for applying seal stamps. 4,564,412, Cl. 156-484.000.

Ochi, Kenji: *See*—
Kataoka, Yushin; Matsuda, Masaaki; Ochi, Kenji; and Aoi, Masahiro, 4,564,659, Cl. 525-328.200.

O'Connor, George L.: *See*—
Briggs, John R.; O'Connor, George L.; and Robson, John H., 4,564,715, Cl. 568-867.000.

Oda, Yasuyuki; and Iwase, Kazuhiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetic head driving unit. 4,564,872, Cl. 360-78.000.

Odagiri, Masaru: *See*—
Suzuki, Takashi; Shinohara, Koichi; Odagiri, Masaru; and Fujita, Takashi, 4,564,549, Cl. 428-141.000.

Odemar, Norbert: *See*—
Dirmeyer, Josef; Odemar, Norbert; and Winzer, Gerhard, 4,564,260, Cl. 350-96.160.

Odenthal, Heinz, to Andreas Kufferath GmbH & Co. KG. Multiple ply dewatering screen particularly for a web forming part of a paper making machine. 4,564,051, Cl. 139-425.00A.

Odintsova, Ljudmila G.: *See*—
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.

Oerlikon-Boehringer GmbH: *See*—
Berbalk, Hermann, 4,564,323, Cl. 409-200.000.

Offermann, Paul F., to Chevron Research Company. Methods and apparatus for detecting abnormalities in proximity effect heat-tracing circuits. 4,564,747, Cl. 219-482.000.

Ofshred Limited: *See*—
Bleasdale, Stephen F., 4,564,146, Cl. 241-236.000.

Ogasawara, Nobuhiko: *See*—
Tomite, Tosio; Ogasawara, Nobuhiko; Isii, Kaniti; and Kanamaru, Hisanobu, 4,564,776, Cl. 310-70.00R.

Ogata, Kazumi, to Senju Pharmaceutical Co., Ltd. Phosphoric acid diesters or their salts and process for producing the same. 4,564,686, Cl. 549-220.000.

Ogawa, Toshio, to Murata Manufacturing Co., Ltd. Ceramic filter using multiple thin piezoelectric layers. 4,564,782, Cl. 310-359.000.

Ogawa, Tsutomu: *See*—
Miyazaki, Hiroo; Shirai, Teruo; and Ogawa, Tsutomu, 4,563,910, Cl. 74-820.000.

Ogorek, Kurt: *See*—
Holz, Joachim; Meier, Wolfgang; Ogorek, Kurt; Goris, Heinrich; and Schwarting, Karl H., 4,564,241, Cl. 299-43.000.

Ogura, Mitsugi, to Tokyo Shibaura Denki Kabushiki Kaisha. Combined MOS/memory transistor structure. 4,564,854, Cl. 357-23.600.

O'Hara, Shunji; Yoshida, Tomio; Satoh, Isao; and Koishi, Kenji, to Matsushita Electric Industrial Co. Ltd. Optical recording and reproducing head. 4,564,931, Cl. 369-110.000.

Ohga, Akihiro: *See*—
Hishinuma, Kazuhiro; and Ohga, Akihiro, 4,564,861, Cl. 358-111.000.
Noguchi, Masaru; Horikawa, Kazuo; and Ohga, Akihiro, 4,564,760, Cl. 250-327.200.

Ohgami, Tadashi; Naitoh, Zenjiro; Saotome, Haruo; Takekoshi, Kenji; and Saitoh, Kimio, to Knorr Shokuhin Kabushiki Kaisha. Process for production of processed sweet corn. 4,564,531, Cl. 426-589.000.

Ohgushi, Masuhito; Ohtsuka, Hiroshi; Asaba, Tsutomu; Hoshi, Hironobu; Goshokubo, Kenichi; Wakui, Takeo; Ishii, Kiminori; Ohno, Masashi; and Okada, Yukio, to Chisso Corporation. Thermoset acrylic resin composition for coating metallic materials and stainless steel coated with the composition. 4,564,557, Cl. 428-333.000.

Ohhashi, Tateo; Kawamoto, Hideyuki; and Murakami, Yutaka, to Japan Steel Works Ltd., The. Heat resistant martensitic stainless steel containing 12 percent chromium. 4,564,392, Cl. 75-128.00V.

Ohji, Yuzuru: *See*—
Harada, Kunio; Yamaguchi, Sumio; Kanda, Hiroshi; Ishikawa, Isao; and Ohji, Yuzuru, 4,563,900, Cl. 73-644.000.

Ohmori, Akira; Tomihashi, Nobuyuki; Inukai, Hiroshi; and Shimizu, Yoshiki, to Daikin Kogyo Co., Ltd. Fluorine-containing olefin. 4,564,717, Cl. 568-843.000.

Ohmura, Hiroshi, to Fuji Photo Film Co., Ltd. Exposure control device for camera. 4,564,278, Cl. 354-195.120.

Ohnishi, Yasuichi: *See*—
Hori, Shinichi; Ohnishi, Yasuichi; Ueda, Masahiro; and Noba, Masahiko, 4,564,916, Cl. 364-551.000.

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Ehrl, Winfried; Reng, Alwin; and Quack, Jochen M., 4,564,520, Cl. 424-70.000.

R. R. Donnelley & Sons Company: *See*—
Clarke, Frederick G. E., Jr.; King, Anthony R.; and Majewski, Anthony, 4,564,186, Cl. 270-54.000.

Racecourse Co-Operative Sugar Association Ltd.: *See*—
McDougall, Edward E., 4,564,062, Cl. 165-108.000.

Rahtz, Dieter; Huth, Andreas; Schmiechen, Ralph; Seidelmann, Dieter; Kehr, Wolfgang; Schneider, Herbert H.; and Braestrup, Claus T., to Schering Aktiengesellschaft. Substituted 5H-pyrimido[5,4-b]indoles. 4,564,610, Cl. 514-80.000.

Ramanarayanan, Madhava P.: *See*—
Ali, Majid; and Ramanarayanan, Madhava P., 4,564,600, Cl. 436-513.000.

Ramirez, Ernest R.: *See*—
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,564,446, Cl. 210-167.000.

Rauffer, Walter: *See*—
Hofmann, Wilfried; Lusch, Herbert; Rauffer, Walter; Zieran, Eberhard; and Sylla, Jurgen, 4,564,276, Cl. 353-55.000.

Rauline, Alain J., to Exxon Research and Engineering Co. Oil composition. 4,564,467, Cl. 252-573.000.

Rauth, Erich; and Form, Ernst, to ANT Nachrichtentechnik GmbH. Cooling system for communications devices with high power losses. 4,564,061, Cl. 165-104.330.

Raynolds, Stuart: *See*—
Lore, Albert L.; and Raynolds, Stuart, 4,564,561, Cl. 428-422.000.

RCA Corporation: *See*—
Barresi, Anthony J.; and Nelson, Leonard, 4,564,135, Cl. 228-6.200.
Kumar, Mahesh; and Whartenby, James C., 4,564,816, Cl. 330-149.000.
Sherman, Jeffrey D.; and Courcy, Stephen E., 4,564,770, Cl. 307-311.000.

Redecker, Friedrich: *See*—
Knop, Hans-Georg; Nowak, Michael; Redecker, Friedrich; and Tiede, Ralf, 4,564,859, Cl. 358-75.000.

Redfern, Timothy: *See*—
Geary, William C.; Mirsaiidi, Mohammad V.; Redfern, Timothy; and Wolfe, David W., 4,563,987, Cl. 123-179.00B.

Reed, George: *See*—
Billingsley, Robert H.; Reed, George; and Schlobohm, Arnold, 4,563,957, Cl. 105-418.000.

Reeder, Conrad M., to Littelfuse, Inc. Fuse with centered fuse filament and method of making the same. 4,563,809, Cl. 29-623.000.

Reference Technology, Inc.: *See*—
Glover, Neal; Clausen, Kermit; Mayne, Chris; and Glissmann, Randy, 4,564,945, Cl. 371-38.000.

Reffelt, James, to Rotron, Incorporated. Brushless DC motor with improved starting. 4,564,793, Cl. 318-254.000.

Rehkopf, Charles H.: *See*—
Baum, Steven A.; Gallaro, Anthony V.; Hovey, Frederick A.; Rehkopf, Charles H.; and Sember, William J., 4,564,786, Cl. 313-479.000.

Reichart, Elwood C., to Motorola, Inc. Offset cancelling AC level detector using an oscillator. 4,564,821, Cl. 331-74.000.

Reichel, Wolfgang: *See*—
Costa, Jorge; and Reichel, Wolfgang, 4,564,187, Cl. 271-9.000.

Reil, Wilhelm, to Tetra Pak Developpement S.A. Packaging means for filling materials which are capable of flow, having a re-closable opening means. 4,564,139, Cl. 229-5.500.

Reimann, George A., to United States of America, Energy. Method for the recovery of silver from silver zeolite. 4,564,391, Cl. 75-63.000.

Reinartz, Hans-Dieter; and Steffes, Helmut, to ITT Industries, Inc. Pressure control device. 4,564,244, Cl. 303-6.00C.

Reiney, Michael G.: *See*—
Wilke, William G.; and Reiney, Michael G., 4,564,804, Cl. 324-103.00P.

Reinmuth, Klaus: *See*—
Kriegesmann, Jochen; Hunold, Klaus; Lipp, Alfred; Reinmuth, Klaus; and Schwetz, Karl A., 4,564,601, Cl. 501-88.000.

Reiter, Stephen E., to Ashland Oil, Inc. Oxydehydrogenation process. 4,564,699, Cl. 560-214.000.

Rekewitz, Rudolf; and Wambach, Hermann, to Siemens Aktiengesellschaft. Transport device for margin-perforated fanfold paper and for continuous roll paper. 4,564,305, Cl. 400-605.000.

Reng, Alwin: *See*—
Ehrl, Winfried; Reng, Alwin; and Quack, Jochen M., 4,564,520, Cl. 424-70.000.

Renwick, John D.: *See*—
Curtis, John R.; and Renwick, John D., 4,564,581, Cl. 430-308.000.

Resch, William A., to Harris Corporation. Television SAW/VSB filter incorporating receiver equalizer. 4,564,858, Cl. 358-21.00R.

Research Association for Petroleum Alternatives Development: *See*—
Shibata, Masatoshi; Uchiyama, Soichi; and Aoki, Yoshinobu, 4,564,643, Cl. 518-717.000.

Research Association Of Synthetic Dyestuffs: *See*—
Niwa, Toshio; Himeno, Kiyoshi; and Maeda, Shuichi, 4,564,673, Cl. 534-794.000.

Research Corporation: *See*—
Gaafar, Hassan A.; and Grimwood, Brian G., 4,564,592, Cl. 435-68.000.
Lerner, Ethan A.; and Lerner, Michael R., 4,564,597, Cl. 435-7.000.

Research Triangle Institute: *See*—
Seltzman, Herbert H.; and Hsieh, Yung-Ao, 4,564,528, Cl. 426-548.000.

Resource Engineering & Manufacturing Company: *See*—
Hart, Milburn L.; and Hart, Robert J., 4,563,841, Cl. 51-411.000.

Respiratory Care, Inc.: *See*—
Gupton, John, 4,564,748, Cl. 219-497.000.

Reuss, George D.: *See*—
Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., 4,563,810, Cl. 29-749.000.

Revici, Emanuel, to Alphatime Ltd. Co., Inc. Selenium compounds having antineoplastic activity, process for the preparation thereof and pharmaceutical compositions therefrom. 4,564,634, Cl. 514-558.000.

Rey, Charles A.: *See*—
Danley, Thomas J.; and Rey, Charles A., 4,564,727, Cl. 179-116.000.

Rhone-Poulenc Recherches: *See*—
Cassat, Robert; and Alliot-Lugaz, Maurice, 4,564,424, Cl. 204-20.000.

Rich, Hubert A.: *See*—
Lambert, Gerard L.; McKittrick, Michael T.; Rich, Hubert A.; and Saffer, Gary M., 4,564,197, Cl. 273-86.00D.

Richard, Joseph: *See*—
Coissard, Pierre; Richard, Joseph; and Morin, Francois, 4,563,806, Cl. 29-571.000.

Richardson, Donald C.: *See*—
Jones, Marshall G.; and Richardson, Donald C., 4,564,736, Cl. 219-121.00L.

Richter Gedeon Vegyeszeti Gyar Rt: *See*—
Toth, Edit; Torley, Jozsef; Hajdu, Istvan; Gorog, Sander; Maderspach, Andrea; Hajos, Gyorgy; Szporny, Laszlo ; and Javor, Andras, 4,564,630, Cl. 514-478.000.

Richter, Klaus: *See*—
Feldmann, John; Koebernick, Hubert; Richter, Klaus; and Woelk, Hans-Ulrich, 4,564,692, Cl. 549-464.000.

Ricoh Company, Ltd.: *See*—
Ishima, Kazumi, 4,564,749, Cl. 219-497.000.
Yasuda, Wataru; Sakamoto, Koji; and Kanno, Fuchio, 4,564,285, Cl. 355-3.0DD.

Riederer, Manfred, to Wacker-Chemie GmbH. Process for stabilizing organopolysiloxanes. 4,564,693, Cl. 556-401.000.

Rieker, Heinz: *See*—
Stephan, Wolfgang; and Rieker, Heinz, 4,564,906, Cl. 364-424.100.

Riley, Richard L.: *See*—
Studt, William L.; Riley, Richard L.; and Douglas, George H., 4,564,640, Cl. 514-598.000.

Rinaldi, Antonio: *See*—
Neri, Carlo; Giroldini, Villiam; Rinaldi, Antonio; Traversoni, Mario; and Clerici, Mario, 4,564,691, Cl. 549-462.000.

Rinck, Jean C.; Lecomte, Alain M.; and Scherrer, Alain, to Manufacture de Machines du Haut Rhin, "Manurhin" . Machine for the double treatment of workpieces while they are continually moving and recycled upon a operating drum, particularly the successive varnishing of bodies of revolution. 4,563,935, Cl. 86-17.000.

Ringlee, David R.; and Gaddis, Paul G., to Weyerhaeuser Company. Field repairable circular saw. 4,563,929, Cl. 83-840.000.

Rinnooy Kan, Edmond A. Eyeglasses with interchangeable parts. 4,564,272, Cl. 351-153.000.

Ristvedt-Johnson, Inc.: *See*—
Ristvedt, Victor G., 4,564,036, Cl. 133-3.00A.

Ristvedt, Victor G., to Ristvedt-Johnson, Inc. Coin sorting system with controllable stop. 4,564,036, Cl. 133-3.00A.

Rittenhouse, Larry E.: *See*—
Kilen, Richard S.; and Rittenhouse, Larry E., 4,564,794, Cl. 318-314.000.

Ritter, J. Alan: *See*—
Hutchison, Stephen; Ritter, J. Alan; and Virkus, Mark, 4,564,018, Cl. 128-660.000.

Ritter, James D., to Boeing Company, The. Multiple lap-joint for thermoplastic laminates. 4,564,543, Cl. 428-58.000.

Robbins & Craig Welding & Mfg. Co.: *See*—
Bacon, Jeffery E.; Craig, James E.; and Pedersen, Mark K., 4,564,430, Cl. 204-206.000.

Robert Bosch GmbH: *See*—
Daumuller, Hans; and Ruckwied, Heinz, 4,564,891, Cl. 362-294.000.
Flohrs, Peter, 4,564,771, Cl. 307-315.000.
Gansel, Eduard; Schaal, Gunter; Schneider, Helmut; Schramm, Heribert; Seidel, Eberhard; and Zilly, Gunter, 4,564,181, Cl. 269-88.000.
Konrath, Karl; and Weiss, Otmar, 4,563,996, Cl. 123-502.000.
Locher, Johannes; and Schmidt, Wolfgang, 4,563,995, Cl. 123-494.000.
Lungu, Corneliu, 4,564,046, Cl. 137-625.650.
Peter, Cornelius, 4,563,989, Cl. 123-339.000.

Roberts, David B.: *See*—
Clitheros, Derek P.; Livingstone, David A.; Roberts, David B.; and Cawthorne, Roland, 4,564,410, Cl. 156-356.000.

Roberts, Wf. Dual purpose closure for heat exchanges. 4,564,065, Cl. 165-158.000.

Roberts, William E.; and Cripps, Milo, to Excellon Industries. Feed arrangement for pick-and-place machine. 4,564,326, Cl. 414-131.000.

Robinson, Paul R.; and Moorehead, Eric L., to Union Oil Company of California. Oxidative-dehydrogenation catalyst and process. 4,564,603, Cl. 502-60.000.

Robot Research, Inc.: *See—*
Stahler, John P., 4,564,823, Cl. 332-17.000.

Robson, John H.: *See—*
Briggs, John R.; O'Connor, George L.; and Robson, John H., 4,564,715, Cl. 568-867.000.

Roche, Karen M.; and Eyerly, Robert M., to Minnesota Mining and Manufacturing Company. Prosthetic acetabular cup. 4,563,778, Cl. 623-22.000.

Roche, Thomas A.: *See—*
Christ, Allen E.; and Roche, Thomas A., 4,564,880, Cl. 361-212.000.

Rock, Erich; and Hollenstein, Helmut, to Julius Blum Gesellschaft m.b.H. Furniture fitting. 4,564,306, Cl. 403-14.000.

Rockandel, Michael A.: *See—*
Fairweather, Michael J.; Rockandel, Michael A.; Sadan, Abraham; and Swinkels, Godefridus M., 4,564,508, Cl. 423-189.000.

Rocke, Dennis, to Shelleden Products Limited. Pharmaceutical preparations and compositions. 4,564,522, Cl. 424-195.100.

Rogers, Jerrold J.; and Sirotiak, Judd L., to Tektronix, Inc. Compensation circuit for synchronizing image motion with a movable recording medium. 4,564,849, Cl. 346-110.00R.

Rogers, Wilfred R.: *See—*
Damiano, Ralph R.; Rogers, Wilfred R.; and Whitney, Charles A., 4,564,256, Cl. 339-99.00R.

Rogge, Dieter, to Windmoller & Holscher. Printing press. 4,563,949, Cl. 101-174.000.

Rogler, Wolfgang: *See—*
Markert, Helmut; Rogler, Wolfgang; Kretzschman, Klaus; and Hauschildt, Klaus-Robert, 4,564,651, Cl. 524-589.000.

Rohner, Joachim, to W. Schlafhorst & Co. Winding machine. 4,564,147, Cl. 242-35.50A.

Rolf, Meinhard; Neeff, Rutger; Muller, Walter; and Hederich, Volker, to Bayer Aktiengesellschaft. Isoindolazines. 4,564,680, Cl. 546-155.000.

Romano, Robert P., to Comus International, Inc. Apparatus for testing a telephone line. 4,564,728, Cl. 179-175.30R.

Rommen, Hans: *See—*
Bald, Wilfried; Rommen, Hans; and Stoy, Erich, 4,563,888, Cl. 72-243.000.

Ronchetti, Camillo: *See—*
Buzzanca, Giovanni; Ronchetti, Camillo; Uberti, Franco; and Anzani, Renato, 4,564,436, Cl. 204-400.000.

Roper, Philip E.: *See—*
Birley, Stuart S.; and Roper, Philip E., 4,564,743, Cl. 219-137.00R.

Roseliep, Robert E. Form broach assembly. 4,564,320, Cl. 407-15.000.

Rosenbaum, Joseph G. Ophthamological method for testing tear flow and composition for use in same. 4,564,518, Cl. 424-9.000.

Rosenberg, Michael J.; and Erpel, Alfred C., to Rosenberg, Michael J. Nontiltable, straight line path ribbon cartridge shifting means for multicolor ribbon including MICR ink. 4,564,303, Cl. 400-208.000.

Rosenfeld, John G.; Watts, Clark; and York, Donald H. Method and apparatus for intracranial pressure estimation. 4,564,022, Cl. 128-748.000.

Rosenstatter, Otto, to Dentalwerk Buroos Gesellschaft m.b.H. Angle piece for dental purposes. 4,564,354, Cl. 433-133.000.

Rosser, Paul J.: *See—*
Scovell, Peter D.; Rosser, Paul J.; and Tomkins, Gary J., 4,563,805, Cl. 29-571.000.

Rotondi, Anthony J.: *See—*
Mullich, Richard O.; and Rotondi, Anthony J., 4,564,229, Cl. 292-169.130.

Rotopack Tools Pty. Limited: *See—*
McDonald, Douglas A., 4,563,923, Cl. 81-466.000.

Rotron, Incorporated: *See—*
Reffelt, James, 4,564,793, Cl. 318-254.000.

Rozanc, Richard C. Method for anchoring a bolt in a rock-like structure. 4,564,315, Cl. 405-261.000.

Rozsi, Donald J.: *See—*
Smith, Stanley K.; and Rozsi, Donald J., 4,564,910, Cl. 364-474.000.
Smith, Stanley K.; Rozsi, Donald J.; and Sabroff, Alvin M., 4,564,911, Cl. 364-474.000.

Rubinstein, Ian; and Woodford, Raymond B., to Exxon Production Research Co. In-place wellbore consolidation in petroleum reservoirs using sulfur-oil polymers. 4,564,069, Cl. 166-288.000.

Ruckwied, Heinz: *See—*
Daumuller, Hans; and Ruckwied, Heinz, 4,564,891, Cl. 362-294.000.

Rudelick, John, to Milwaukee Faucets (Div. of Universal-Rundle Corporation). Faucet and liquid supply tube therefor. 4,564,040, Cl. 137-454.600.

Ruhland, Dieter. Autotransfusion apparatus. 4,564,359, Cl. 604-4.000.

Ruhrchemie Aktiengesellschaft: *See—*
Bussemeier, Bernd; Frohning, Carl D.; Horn, Gerhardt; and Kluy, Werner, 4,564,642, Cl. 518-717.000.

Ruhrtal-Elektrizitatsgesellschaft Hartig GmbH & Co.: *See—*
Hartig, Alfred, 4,564,731, Cl. 200-269.000.

Rumpel, Peter, to Siemens Aktiengesellschaft. Pasting station for a fast printer. 4,564,184, Cl. 270-39.000.

Runkle, Franklin D.; and Tennenhouse, Gerald J., to Ford Motor Company. Method and apparatus for increasing wear life of ceramic tools. 4,563,924, Cl. 82-1.00C.

Rupp, Werner: *See—*
Schill, Jurgen; Rupp, Werner; Schaff, Werner; and Urban, Jorg, 4,563,801, Cl. 29-156.80B.

Russ, Calvin W.; and Craze, David A. Hydraulic wheel lift system for tow vehicles. 4,564,207, Cl. 280-402.000.

Russell, Daniel: *See—*
Kimmons, D. L.; and Russell, Daniel, 4,564,346, Cl. 418-206.000.

Rutgerswerke Aktiengesellschaft: *See—*
Orth, Winfried; Pastorek, Emmerich; and Fickert, Werner, 4,564,700, Cl. 562-405.000.

Ryan, Austin T. Agricultural implement. 4,564,074, Cl. 172-265.000.

Ryan, Robert M. Fresh salmon-cleaning machine. 4,563,793, Cl. 17-58.000.

Rzeszewski, Theodore S.: *See—*
LoCicero, Joseph L.; Pazarci, Melih; and Rzeszewski, Theodore S., 4,564,857, Cl. 358-11.000.

S. Himmelstein and Company: *See—*
Himmelstein, Sydney, 4,563,905, Cl. 73-862.360.

Sabroff, Alvin M.: *See—*
Smith, Stanley K.; Rozsi, Donald J.; and Sabroff, Alvin M., 4,564,911, Cl. 364-474.000.

Sachse, Burkhard: *See—*
Stahler, Gerhard; Knauf, Werner; Sachse, Burkhard; and Waltersdorfer, Anna, 4,564,611, Cl. 514-99.000.

SADACEM: *See—*
Mangal, Michel, 4,563,849, Cl. 52-235.000.

Sadan, Abraham: *See—*
Fairweather, Michael J.; Rockandel, Michael A.; Sadan, Abraham; and Swinkels, Godefridus M., 4,564,508, Cl. 423-189.000.

Sadlier, William K.: *See—*
Alley, Lynn D.; Alley, Stephen W.; Sadlier, William K.; and Burton, Richard A., 4,564,751, Cl. 235-146.000.

Safe-T-Jack, Inc.: *See—*
Arzouman, Harry H., 4,564,172, Cl. 254-1.000.

Saffer, Gary M.: *See—*
Lambert, Gerard L.; McKittrick, Michael T.; Rich, Hubert A.; and Saffer, Gary M., 4,564,197, Cl. 273-86.00D.

Sagami Chem. Rsch. Cntr.: *See—*
Sugiyama, Katsumi; Takeda, Hideo; Sato, Hiroko; Nonaka, Yuji; Oyama, Kiyotaka; and Kubo, Masashige, 4,564,471, Cl. 260-112.50K.

Sagami Chemical Research Center: *See—*
Terashima, Shiro; Kimura, Yoshikazu; Suzuki, Michiyo; Matsumoto, Teruyo; and Abe, Rumiko, 4,564,674, Cl. 536-6.400.

Saigo, Kazuhide; and Suzuki, Masayoshi, to NRC Corporation. Resist material comprising polymer of allylsilyl compound and pattern forming method using the resist material. 4,564,576, Cl. 430-197.000.

Saint-Gobain Vitrage: *See—*
Crumbach, Richard; Schilde, Heinz-Josef; and Tiedemann, Helmut, 4,564,408, Cl. 156-212.000.

Saito, Hitoshi: *See—*
Kurabayashi, Katsuhiko; Kinoshita, Hidefumi; Saito, Hitoshi; and Takahashi, Toshio, 4,564,675, Cl. 536-18.100.

Saito, Junichi: *See—*
Yamada, Yasuo; Saito, Junichi; Tamura, Tatsuo; and Sakawa, Shinji, 4,564,638, Cl. 514-585.000.

Saitoh, Hisao: *See—*
Tsuge, Mitsuo; Kohmura, Shigeru; Sugiyama, Keiichi; Saitoh, Hisao; and Saitoh, Shigenori, 4,564,119, Cl. 220-270.000.

Saitoh, Kimio: *See—*
Ohgami, Tadashi; Naitoh, Zenjiro; Saotome, Haruo; Takekoshi, Kenji; and Saitoh, Kimio, 4,564,531, Cl. 426-589.000.

Saitoh, Shigenori: *See—*
Tsuge, Mitsuo; Kohmura, Shigeru; Sugiyama, Keiichi; Saitoh, Hisao; and Saitoh, Shigenori, 4,564,119, Cl. 220-270.000.

Saitoh, Takeshi; and Hatashita, Hiroshi, to Hitachi, Ltd. TV Tuner oscillator with feedback for more low frequency power. 4,564,822, Cl. 331-117.00R.

Sakaeda, Keiko: *See—*
Sashiki, Takashi; and Sakaeda, Keiko, 4,564,103, Cl. 198-358.000.

Sakai, Hiroyuki; Takemoto, Toyoki; Kawakita, Kenji; Fujita, Tsutomu; and Akiyama, Atsuko, to Matsushita Electric Industrial Co., Ltd. Method for making semiconductor device utilizing molecular beam epitaxy to form the emitter layers. 4,563,807, Cl. 29-591.000.

Sakamaki, Hiroshi; Sugishita, Susumu; and Horikoshi, Yukio, to Nippon Piston Ring Co., Ltd. Rotary compressor having rotary sleeve for rotation with vanes. 4,564,344, Cl. 418-173.000.

Sakamoto, Akira: *See—*
Taira, Kazuo; Sakamoto, Akira; Yamada, Muneki; Aizawa, Masanori; and Ueno, Hiroshi, 4,564,541, Cl. 428-35.000.

Sakamoto, Eiichi; Kawasaki, Mikio; Ono, Kouji; and Yoshizawa, Tomomi, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic material for radiography. 4,564,588, Cl. 430-509.000.

Sakamoto, Koji: *See—*
Yasuda, Wataru; Sakamoto, Koji; and Kanno, Fuchio, 4,564,285, Cl. 355-3.0DD.

Sakawa, Shinji: *See—*
Yamada, Yasuo; Saito, Junichi; Tamura, Tatsuo; and Sakawa, Shinji, 4,564,638, Cl. 514-585.000.

Salem, Eli: *See—*
Flynn, George C.; Salem, Eli; and Kunin, Robert, 4,564,455, Cl. 210-675.000.

Salomonsson, Krister. Blade guide for saw blades. 4,563,928, Cl. 83-821.000.

Saltz, Edward: *See—*
Grant, Edward L.; Stops, Earl E.; and Saltz, Edward, 4,564,165, Cl. 248-343.000.

Salzburg, Herbert; Hajek, Manfred; and Meyborg, Holger, to Bayer Aktiengesellschaft. Process for the production of dianhydrohexitol mixtures and the production of polymers from such mixtures. 4,564,645, Cl. 521-159.000.

Samelson, Samuel, to EX-CELL Home Fashions. Cushion with simulated button tuft and method for manufacturing same. 4,563,785, Cl. 5-472.000.

Sampatacos, Evan P., to Hughes Helicopters, Inc. Low drag, bearingless rotor head for helicopters. 4,564,336, Cl. 416-141.000.

Sanden Corporation: *See—*
Nakamura, Yasuo, 4,564,137, Cl. 228-173.600.

Sanderson, Gary M.; and White, Charles M., to Harris Corporation. Apparatus providing automatic and manual control of setup adjustments for TV cameras. 4,564,856, Cl. 358-10.000.

Sankyo Company Limited: *See—*
Nakazawa, Junichi; Hashimoto, Teruo; Kaneko, Masanao; and Miyaoka, Takeo, 4,564,676, Cl. 544-21.000.

Sano, Yasuro, to Janome Sewing Machine Co., Ltd. Switching mechanism for electronically controlled sewing machine. 4,563,966, Cl. 112-455.000.

Sanyo Electric Co., Ltd.: *See—*
Nonoue, Torahiko; Moriki, Etsuzo; Miyazaki, Yoshifumi; Izawa, Takahal; Kikkawa, Shinichi; and Shiraki, Kenhachi, 4,564,288, Cl. 355-57.000.

Sanyo Kokusaku Pulp Co., Ltd.: *See—*
Nishikubo, Toshihiko; and Shimizu, Kazuo, 4,564,657, Cl. 525-158.000.
Tani, Hideki; Arai, Makoto; Sasaki, Takayuki; Hayama, Kazuhide; and Yamashita, Akira, 4,564,560, Cl. 428-411.100.

Saotome, Haruo: *See—*
Ohgami, Tadashi; Naitoh, Zenjiro; Saotome, Haruo; Takekoshi, Kenji; and Saitoh, Kimio, 4,564,531, Cl. 426-589.000.

Saputo, Lorraine E.; and Saputo, Vincent J. Water treatment dispensing system. 4,564,506, Cl. 422-266.000.

Saputo, Vincent J.: *See—*
Saputo, Lorraine E.; and Saputo, Vincent J., 4,564,506, Cl. 422-266.000.

Saruta, Akira: *See—*
Senoo, Masaharu; Noma, Keizi; Saruta, Akira; Yoshizaki, Masanori; Teshirogi, Koichi; and Yaegashi, Kouei, 4,564,777, Cl. 310-156.000.

Sasaki, Hiromu: *See—*
Hayashi, Motohiko; Karita, Toshiaki; Kotani, Matahira; and Sasaki, Hiromu, 4,564,847, Cl. 346-76.0PH.

Sasaki, Katsusuke: *See—*
Ide, Katsuyuki; Yamada, Masatoshi; and Sasaki, Katsusuke, 4,564,073, Cl. 172-120.000.

Sasaki, Masao; Nishijima, Toyoki; Takada, Shun; Kadowaki, Takashi; and Onodera, Kaoru, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic material. 4,564,590, Cl. 430-551.000.

Sasaki, Takayuki: *See—*
Tani, Hideki; Arai, Makoto; Sasaki, Takayuki; Hayama, Kazuhide; and Yamashita, Akira, 4,564,560, Cl. 428-411.100.

Sasaya, Osamu: *See—*
Morishita, Hajime; Miura, Kiyoshi; Sasaya, Osamu; and Nonogaki, Saburo, 4,564,572, Cl. 430-28.000.

Sashiki, Takashi; and Sakaeda, Keiko, to Kabushiki Kaisha Ishida Koki Seisakusho. Method and apparatus for convey.ng linear articles. 4,564,103, Cl. 198-358.000.

Sato, Fumio: *See—*
Miyano, Seiji; Sumoto, Kunihiro; Morita, Minoru; and Sato, Fumio, 4,564,624, Cl. 514-413.000.

Sato, Hiroki; Natori, Takehisa; and Nakano, Takao, to Sony Corporation. Envelope structure for flat cathode ray tube. 4,564,785, Cl. 313-422.000.

Sato, Hiroko: *See—*
Sugiyama, Katsumi; Takeda, Hideo; Sato, Hiroko; Nonaka, Yuji; Oyama, Kiyotaka; and Kubo, Masashige, 4,564,471, Cl. 260-112.50K.

Sato, Mikio: *See—*
Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.

Sato, Tadashi; Takahashi, Genji; and Inui, Yoshiaki, to Hitachi, Ltd. Method and apparatus for optically measuring a current. 4,564,754, Cl. 250-225.000.

Sato, Yasuji: *See—*
Nakayama, Yasunobu; Sato, Yasuji; and Shibata, Shinichi, 4,564,724, Cl. 179-2.00A.

Sato, Yasuo: *See—*
Nagase, Hiroshi; and Sato, Yasuo, 4,564,639, Cl. 514-594.000.

Satoh, Isao: *See—*
O'Hara, Shunji; Yoshida, Tomio; Satoh, Isao; and Koishi, Kenji, 4,564,931, Cl. 369-110.000.

Saunders Archery Co.: *See—*
Saunders, Charles A., 4,563,821, Cl. 33-265.000.

Saunders, Charles A., to Saunders Archery Co. Peep sight for compound bow. 4,563,821, Cl. 33-265.000.

Sawada, Akashi: *See—*
Hayafuji, Yoshinari; Sawada, Akashi; Usui, Setsuo; and Shibata, Akikazu, 4,564,403, Cl. 148-171.000.

Sawyer, Edith M.: *See—*
Sawyer, Willard C.; Sawyer, Edith M.; Keef, Sherron M.; and Sawyer, John W., 4,564,368, Cl. 44-1.00D.

Sawyer, John W.: *See—*
Sawyer, Willard C.; Sawyer, Edith M.; Keef, Sherron M.; and Sawyer, John W., 4,564,368, Cl. 44-1.00D.

Sawyer, Willard C.; Sawyer, Edith M.; Keef, Sherron M.; and Sawyer, John W. Method and apparatus for use in drying biomass particles. 4,564,368, Cl. 44-1.00D.

Scales, John M., to Nicolon Corporation. Protective jacket for use in revetment structures. 4,564,311, Cl. 405-20.000.

Scalzi, Casper A.: *See—*
Guyette, Richard R.; Hall, Eddie T.; Meritt, Allan S.; Newson, Stephen R.; Scalzi, Casper A.; and Sears, Glenn W., Jr., 4,564,903, Cl. 364-300.000.

Scandia Packaging Machinery Co.: *See—*
Anderson, Andrew W., deceased, 4,564,104, Cl. 198-422.000.

Scanlon, John J.: *See—*
Pelensky, Joseph; Hubbard, James R.; and Scanlon, John J., 4,564,852, Cl. 346-140.00R.

Schaal, Gunter: *See—*
Gansel, Eduard; Schaal, Gunter; Schneider, Helmut; Schramm, Heribert; Seidel, Eberhard; and Zilly, Gunter, 4,564,181, Cl. 269-88.000.

Schachar, Ronald A. Method for maintaining corneal shape after radial keratotomy. 4,564,637, Cl. 514-573.000.

Schaedler, Charles C.: *See—*
Loring, Wolson J.; and Schaedler, Charles C., 4,564,200, Cl. 273-332.000.

Schaeffer, Georg: *See—*
Kuckertz, Herbert; and Schaeffer, Georg, 4,564,712, Cl. 568-635.000.

Schaff, Werner: *See—*
Schill, Jurgen; Rupp, Werner; Schaff, Werner; and Urban, Jorg, 4,563,801, Cl. 29-156.80B.

Schaub, Bernard: *See—*
Fillot, Alain; Gallet, Jean; Paltrier, Sylvain; and Schaub, Bernard, 4,564,415, Cl. 156-604.000.

Schering Aktiengesellschaft: *See—*
Rahtz, Dieter; Huth, Andreas; Schmiechen, Ralph; Seidelmann, Dieter; Kehr, Wolfgang; Schneider, Herbert H.; and Braestrup, Claus T., 4,564,610, Cl. 514-80.000.

Schering Corporation: *See—*
Kreutner, William; and Siegel, Marvin I., 4,564,626, Cl. 514-430.000.

Scherrer, Alain: *See—*
Rinck, Jean C.; Lecomte, Alain M.; and Scherrer, Alain, 4,563,935, Cl. 86-17.000.

Schijven, Lucas W. M., to U.S. Philips Corporation. Cassette recorder with freely pivoting ejection lever. 4,564,874, Cl. 360-96.100.

Schilde, Heinz-Josef: *See—*
Crumbach, Richard; Schilde, Heinz-Josef; and Tiedemann, Helmut, 4,564,408, Cl. 156-212.000.

Schill, Jurgen; Rupp, Werner; Schaff, Werner; and Urban, Jorg, to Klein, Schanzlin & Becker Aktiengesellschaft. Method of reinforcing the edges of impeller vanes or the like. 4,563,801, Cl. 29-156.80B.

Schlafer, Ludwig, to Hoechst Aktiengesellschaft. Water-soluble monoazo and disazo compounds containing a fibre-reactive 2-alkoxy-5-chloro-aniline diazo component and copper complexes thereof, useful as dyestuffs. 4,564,672, Cl. 534-629.000.

Schlobohm, Arnold: *See—*
Billingsley, Robert H.; Reed, George; and Schlobohm, Arnold, 4,563,957, Cl. 105-418.000.

Schmid, Peter: *See—*
Bauer, Wilhelm; Berger, Josef; Dahm, Horst; Klemm, Hans; Schmid, Peter; Seidl, Horst; and Walter, Dietmar, 4,564,883, Cl. 361-334.000.

Schmidt, Birgit: *See—*
Weddigen, Gerd; Huber, Robert; Schmidt, Birgit; and Schneider, Hartmut, 4,564,466, Cl. 525-505.000.

Schmidt, Manfred: *See—*
Dicke, Hans-Rudolf; Schmidt, Manfred; El-Sayed, Aziz; Biskup, Ulrich; Bottenbruch, Ludwig; and Freitag, Dieter, 4,564,669, Cl. 528-173.000.

Schmidt, Martin: *See—*
Siegmann, Klaus; and Schmidt, Martin, 4,564,021, Cl. 128-716.000.

Schmidt, Wolfgang: *See—*
Locher, Johannes; and Schmidt, Wolfgang, 4,563,995, Cl. 123-494.000.

Schmiechen, Ralph: *See—*
Rahtz, Dieter; Huth, Andreas; Schmiechen, Ralph; Seidelmann, Dieter; Kehr, Wolfgang; Schneider, Herbert H.; and Braestrup, Claus T., 4,564,610, Cl. 514-80.000.

Schmit, Joseph L.: *See—*
Nohava, Thomas E.; and Schmit, Joseph L., 4,564,494, Cl. 264-275.000.

Schmitt, Gunter K., to Koenig & Bauer Aktiengesellschaft. Folder assembly. 4,564,470, Cl. 270-21.100.

Schmitt, Reinhard: *See—*
Klein, Klaus; and Schmitt, Reinhard, 4,564,250, Cl. 339-14.00R.

Schmitz, Franz J.; Wollbeck, Rudi; and Klein, Wolfgang, to Akzo N.V. Method for bubble-free gas feed. 4,564,373, Cl. 55-16.000.

Schneider, Hartmut: *See—*
Weddigen, Gerd; Huber, Robert; Schmidt, Birgit; and Schneider, Hartmut, 4,564,466, Cl. 525-505.000.

Schneider, Helmut: *See*—
Gansel, Eduard; Schaal, Gunter; Schneider, Helmut; Schramm, Heribert; Seidel, Ebernard; and Zilly, Gunter, 4,564,181, Cl. 269-88.000.

Schneider, Herbert H.: *See*—
Rahtz, Dieter; Huth, Andreas; Schmiechen, Ralph; Seidelmann, Dieter; Kehr, Wolfgang; Schneider, Herbert H.; and Braestrup, Claus T., 4,564,610, Cl. 514-80.000.

Schnetz, Rainer, to Albert Schnetz, Firma. Hydraulic dashpot. 4,564,176, Cl. 267-64.110.

Schoen, Josef; and Hoffmann, Rudolf, to Siemens Aktiengesellschaft. Method of manufacturing an optical coupling device. 4,564,417, Cl. 156-633.000.

Scholle Corporation: *See*—
Lloyd-Davies, William T., 4,564,132, Cl. 222-522.000.

Scholtz, Martin P. Fireplace fan. 4,564,538, Cl. 428-12.000.

Schommler, Manfred; and Dirks, Arthur, to Werner H. K. Peters Maschinenfabrik GmbH. Machine for longitudinally cutting and grooving a length of material, especially corrugated board. 4,563,930, Cl. 83-862.000.

Schoonejongen, Ronald J.: *See*—
Martin, F. Wayne; Shahbazi, Samson; and Schoonejongen, Ronald J., 4,564,563, Cl. 428-546.000.

Schramm, Heribert: *See*—
Gansel, Eduard; Schaal, Gunter; Schneider, Helmut; Schramm, Heribert; Seidel, Eberhard; and Zilly, Gunter, 4,564,181, Cl. 269-88.000.

Schreiber, Alfons: *See*—
Kreth, Julis; Schreiber, Alfons; and Steinko, Willi, 4,563,818, Cl. 30-417.000.

Schrewe, Hans; Pleschiutschnigg, Fritz-Peter; van Bonn, Hans; Holter, Karl; and Wiegard, Gustav, to Mannesmann AG; and Gustav Wiegard Maschinenfabrik. Controlling the feeding of casting powder. 4,564,058, Cl. 164-72.000.

Schuller, Ivan K.; Ketterson, John B.; and Banerjee, Indrajit, to United States of America, Energy. Superconducting magnet wire. 4,564,564, Cl. 428-662.000.

Schulte, Wolfgang: *See*—
Bechthold, Horst; Fischer, Heinz J.; and Schulte, Wolfgang, 4,564,510, Cl. 423-235.000.

Schulze, Ernst-Friedrich: *See*—
Bieringer, Hermann; Burstell, Helmut; Handte, Reinhard; Kocher, Helmut; and Schulze, Ernst-Friedrich, 4,564,381, Cl. 71-88.000.

Schulze, Gerd, to Deutsche Babcock Aktiengesellschaft. Bearing support stand. 4,564,300, Cl. 384-581.000.

Schumann, Klaus: *See*—
Altenschopfer, Theodor; Giesen, Walter; Schumann, Klaus; and Streschnak, Benno, 4,564,535, Cl. 427-285.000.

Schuurman, Teunis: *See*—
Boltze, Karl-Heinz; Davies, Margaret A.; Junge, Bodo; Schuurman, Teunis; and Traber, Jorg, 4,564,613, Cl. 514-222.000.

Schwarting, Karl H.: *See*—
Holz, Joachim; Meier, Wolfgang; Ogorek, Kurt; Goris, Heinrich; and Schwarting, Karl H., 4,564,241, Cl. 299-43.000.

Schwarz, Ricardo B.: *See*—
Johnson, William L.; and Schwarz, Ricardo B., 4,564,396, Cl. 148-4.000.

Schwarze, Rigobert. Pipe bending machine. 4,563,891, Cl. 72-149.000.

Schwefel, Ernst, to Dr. Johannes Heidenhain GmbH. Numerical control system for determining tool withdrawal direction. 4,564,912, Cl. 364-474.000.

Schwetz, Karl A.: *See*—
Kriegesmann, Jochen; Hunold, Klaus; Lipp, Alfred; Reinmuth, Klaus; and Schwetz, Karl A., 4,564,601, Cl. 501-88.000.

Sciaky Bros., Inc.: *See*—
Estes, Jeffrey M., 4,564,738, Cl. 219-121.0ED.

Scopes, David I. C.; Newton, Roger F.; and Cookson, Richard C., to Glaxo Group Limited. 5-Halovinyl-2'-deoxyuridine derivatives. 4,564,618, Cl. 514-274.000.

Scovell, Peter D.; Rosser, Paul J.; and Tomkins, Gary J., to Standard Telephones and Cables, PLC. Manufacture of MOSFET with metal silicide contact. 4,563,805, Cl. 29-571.000.

Sealock, L. John, Jr.: *See*—
Elliott, Douglas C.; Sealock, L. John, Jr.; and Hallen, Richard T., 4,564,516, Cl. 423-655.000.

Sears, Glenn W., Jr.: *See*—
Guyette, Richard R.; Hall, Eddie T.; Meritt, Allan S.; Newson, Stephen R.; Scalzi, Casper A.; and Sears, Glenn W., Jr., 4,564,903, Cl. 364-300.000.

Secemski, Isaac I.; Lander, Lynn H.; and Princen, Henricus M., to Lever Brothers Company. Liquid laundry detergents with improved soil release properties. 4,564,463, Cl. 252-174.170.

Sedlmayr, Gerhard: *See*—
Baden, Hans; Kuhnemann, Klaus; Sedlmayr, Gerhard; Straszewski, Klaus; and Zeumer, Monika, 4,564,219, Cl. 280-808.000.

Segada, James J.: *See*—
Burkard, Edward A.; and Segada, James J., 4,564,544, Cl. 428-70.000.

Seibert, Charles. Pallet storage rack. 4,564,134, Cl. 224-42.410.

Seibold, James R.: *See*—
Janoff, Andrew S.; Ostro, Marc J.; Weiner, Allan L.; Weissmann, Gerald; and Seibold, James R., 4,564,599, Cl. 436-507.000.

Seidel, Eberhard: *See*—
Gansel, Eduard; Schaal, Gunter; Schneider, Helmut; Schramm, Heribert; Seidel, Eberhard; and Zilly, Gunter, 4,564,181, Cl. 269-88.000.

Seidelmann, Dieter: *See*—
Rahtz, Dieter; Huth, Andreas; Schmiechen, Ralph; Seidelmann, Dieter; Kehr, Wolfgang; Schneider, Herbert H.; and Braestrup, Claus T., 4,564,610, Cl. 514-80.000.

Seidl, Horst: *See*—
Bauer, Wilhelm; Berger, Josef; Dahm, Horst; Klemm, Hans; Schmid, Peter; Seidl, Horst; and Walter, Dietmar, 4,564,883, Cl. 361-334.000.

Seiffert, Raymond C.: *See*—
Garretson, Jay H.; Lazor, Thomas E.; Merva, John J.; Nestor, Charles R.; Plyler, Robert G.; Seiffert, Raymond C.; and Ziegler, Jeffrey L., 4,564,258, Cl. 339-220.00R.

Seigler, Adrian E.: *See*—
Arnold, Richard F.; Cocke, John; Coppersmith, Don; Seigler, Adrian E.; and Strait, Gary E., 4,564,944, Cl. 371-37.000.

Seitz, Werner; Teschendorf, Hans-Jurgen; Michel, Alfred; Traut, Martin; Hofmann, Hans P.; and Kreiskott, Horst, to BASF Aktiengesellschaft. Substituted 1-oxo-2-phenyl-2-(2-alkylaminoethyl)-1,2,3,4-tetrahydronaphthalenes, their preparation and their use. 4,564,641, Cl. 514-650.000.

Sekimoto, Hiroshi: *See*—
Masaichiro, Masui, 4,564,475, Cl. 260-398.500.

Seko, Yasutoshi; and Yanagishima, Takayuki, to Nissan Motor Company, Limited. Dozing warning system for a vehicle. 4,564,833, Cl. 340-576.000.

Sellars, William H. Can opener for flip top cans. 4,563,919, Cl. 81-3.550.

Seltzman, Herbert H.; and Hsieh, Yung-Ao, to Research Triangle Institute. Aminomalonyl alanine compounds and use as dietary sweeteners. 4,564,528, Cl. 426-548.000.

Sember, William J.: *See*—
Baum, Steven A.; Gallaro, Anthony V.; Hovey, Frederick A.; Rehkopf, Charles H.; and Sember, William J., 4,564,786, Cl. 313-479.000.

Semiconductor Energy Laboratory Co., Ltd.: *See*—
Yamazaki, Shunpei, 4,564,533, Cl. 427-39.000.

Sencore, Inc.: *See*—
Winter, Robert A., 4,564,805, Cl. 324-121.00R.

Senju Pharmaceutical Co., Ltd.: *See*—
Ogata, Kazumi, 4,564,686, Cl. 549-220.000.

Senoo, Masaharu; Noma, Keizi; Saruta, Akira; Yoshizaki, Masanori; Teshirogi, Koichi; and Yaegashi, Kouei, to Hitachi, Ltd. Reinforced permanent magnet rotor with cast zinc. 4,564,777, Cl. 310-156.000.

Sericol Group Limited: *See*—
Curtis, John R.; and Renwick, John D., 4,564,581, Cl. 430-308.000.

Serini, Volker; Lindner, Christian; Peters, Horst; and Nising, Wolfgang, to Bayer Aktiengesellschaft. Process for the preparation and/or further processing of polymer blends. 4,564,654, Cl. 525-67.000.

Sermatech International Incorporated: *See*—
Hornberger, Dennis A., 4,564,555, Cl. 428-312.800.

Sethi, Amar J.: *See*—
Yong, Raymond N.; and Sethi, Amar J., 4,564,004, Cl. 127-33.000.

Shahbazi, Samson: *See*—
Martin, F. Wayne; Shahbazi, Samson; and Schoonejongen, Ronald J., 4,564,563, Cl. 428-546.000.

Sharp Kabushiki Kaisha: *See*—
Hayashi, Motohiko; Karita, Toshiaki; Kotani, Matahira; and Sasaki, Hiromu, 4,564,847, Cl. 346-76.0PH.
Nittaya, Hiroshi; and Nishimura, Kosuke, 4,564,954, Cl. 381-51.000.

Sharpe, Anthony N. Apparatus for filtration. 4,564,452, Cl. 210-497.200.

Shaw, Herbert J., to Leland Stanford Junior University, Board of Trustees of the. Fiber optic directional coupler. 4,564,262, Cl. 350-96.150.

Shaw, Herbert J.: *See*—
Newton, Steven A.; Shaw, Herbert J.; and Cutler, Cassius C., 4,564,293, Cl. 356-350.000.

Shay, Lucas K., to Phillips Petroleum Company. Functional protein products. 4,564,523, Cl. 426-60.000.

Shealy, James R.; and Eastman, Lester F., to Northeast Semiconductor Inc. Method and apparatus for improved gettering for reactant gases. 4,564,509, Cl. 423-210.500.

Sheikh, Junaid: *See*—
Evans, Lawrence J.; Sheikh, Junaid; Stock, Rodney D.; and Turkowski, Kenneth E. J., 4,564,915, Cl. 364-521.000.

Shell Oil Company: *See*—
Estreicher, Herbert, 4,564,383, Cl. 71-92.000.

Shelleden Products Limited: *See*—
Rocke, Dennis, 4,564,522, Cl. 424-195.100.

Shenoy, Vittal U., to Xerox Corporation. Corona charging device. 4,564,282, Cl. 355-3.0CH.

Sherman, Jeffrey D.; and Courcy, Stephen E., to RCA Corporation. Solid state relay with fast turnoff. 4,564,770, Cl. 307-311.000.

Shibata, Akikazu: *See*—
Hayafuji, Yoshinari; Sawada, Akashi; Usui, Setsuo; and Shibata, Akikazu, 4,564,403, Cl. 148-171.000.

Shibata, Masatoshi; Uchiyama, Soichi; and Aoki, Yoshinobu, to Research Association for Petroleum Alternatives Development. Process for the production of mixed alcohols. 4,564,643, Cl. 518-717.000.

Shibata, Shinichi: *See*—
Nakayama, Yasunobu; Sato, Yasuji; and Shibata, Shinichi, 4,564,724, Cl. 179-2.00A.

Shibuya, Toru: *See*—
Ichimura, Kunihiro; Yamaoka, Tsuguo; Kaneda, Sadayoshi; and Shibuya, Toru, 4,564,580, Cl. 430-281.000.

Shieldalloy Corporation: *See*—
Murray, Peter; and Slinn, David, 4,564,393, Cl. 75-256.000.

Shilcock, John, to Waddingtons Limited. Lifting device with tongue flaps. 4,564,106, Cl. 206-165.000.
Shimada, Tamotsu; Shinbo, Chiaki; Horiuchi, Hideyuki; and Takatsuji, Masamoto, to Hitachi, Ltd. Laser surgical equipment. 4,564,012, Cl. 128-303.100.
Shimazawa, Katsuji: *See—*
Kato, Shinichi; Tamura, Takeshi; Ambo, Tsugio; and Shimazawa, Katsuji, 4,564,252, Cl. 339-91.00R.
Shimizu, Kazuo: *See—*
Nishikubo, Toshihiko; and Shimizu, Kazuo, 4,564,657, Cl. 525-158.000.
Shimizu, Tetsuo; and Akamatsu, Masafumi, to Daikin Industries, Ltd. Process for preparing aqueous dispersion of polytetrafluoroethylene. 4,564,652, Cl. 524-805.000.
Shimizu, Yoshiki: *See—*
Ohmori, Akira; Tomihashi, Nobuyuki; Inukai, Hiroshi; and Shimizu, Yoshiki, 4,564,717, Cl. 568-843.000.
Shimoda, Teruhisa: *See—*
Yamaoka, Hideyuki; Hatano, Michiharu; Miyazaki, Tomio; Shimoda, Teruhisa; and Oki, Koji, 4,564,389, Cl. 75-38.000.
Shinagawa Jidosha Densen Co., Ltd.: *See—*
Kato, Shinichi; Tamura, Takeshi; Ambo, Tsugio; and Shimazawa, Katsuji, 4,564,252, Cl. 339-91.00R.
Shinbo, Chiaki: *See—*
Shimada, Tamotsu; Shinbo, Chiaki; Horiuchi, Hideyuki; and Takatsuji, Masamoto, 4,564,012, Cl. 128-303.100.
Shinohara, Koichi: *See—*
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Shintani, Tsuneo; Kojima, Soichi; and Goto, Masuo, to Kurosaki Refractories Co., Ltd.; and Kurosaki Rozai Co., Ltd. Method of manufacturing a casting nozzle brick. 4,564,493, Cl. 264-209.100.
Shionogi & Co., Ltd.: *See—*
Hirai, Kentario; Ishiba, Teruyuki; Matsutani, Shigeru; Makino, Itsuo; Fujishita, Toshio; Doteuchi, Masami; and Otani, Koichi, 4,564,623, Cl. 514-408.000.
Shirai, Teruo: *See—*
Miyazaki, Hiroo; Shirai, Teruo; and Ogawa, Tsutomu, 4,563,910, Cl. 74-820.000.
Shiraki, Kenhachi: *See—*
Nonoue, Torahiko; Moriki, Etsuzo; Miyazaki, Yoshifumi; Izawa, Takahal; Kikkawa, Shinichi; and Shiraki, Kenhachi, 4,564,288, Cl. 355-57.000.
Shizuoka Kogyo Company, Ltd.: *See—*
Murakami, Tamotsu, 4,564,413, Cl. 156-504.000.
Shookman, Dennis R.; and Hendrickson, Vergil P., to Caterpillar Tractor Co. Flexible step assembly. 4,564,205, Cl. 280-166.000.
Shop-Vac Corporation: *See—*
Berfield, Robert C., 4,563,789, Cl. 15-323.000.
Shrock, Fred: *See—*
Shrock, Fred J.; and Berkey, Harley, 4,563,784, Cl. 5-37.00R.
Shrock, Fred J.; and Berkey, Harley, to Shrock, Fred. Power actuated seat-bed assembly. 4,563,784, Cl. 5-37.00R.
Shu, Timour T.: *See—*
Hinzmann, Alfred; Preisner, Peter M.; and Shu, Timour T., 4,564,029, Cl. 131-94.000.
Shube, Eugene E., to Plessey Incorporated. High speed, dual operated electromechanical actuator. 4,563,908, Cl. 74-2.000.
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Sickmuller, Alfred: *See—*
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Siebeneiker, Gunter; Brunn, Hartmut; and Steiger, Uwe, to Kromi[illegible] & Schubert. System for scanning mechanical vibrations. 4,563,931, Cl. 84-1.160.
Siegal, Burton L., to Kiwi Coders Corporation. Drop on demand dot matrix printing head. 4,564,846, Cl. 346-75.000.
Siegel, Marvin I.: *See—*
Kreutner, William; and Siegel, Marvin I., 4,564,626, Cl. 514-430.000.
Siegmann, Klaus; and Schmidt, Martin, to Dragerwerk AG. Mouthpiece for a breath-alcohol measuring device. 4,564,021, Cl. 128-716.000.
Siegrist, Ronald, to Vickers, Incorporated. Hydrostatic or pneumatic drive and method of operating same. 4,563,939, Cl. 91-275.000.
Siemens Aktiengesellschaft: *See—*
Bussmann, Egon, 4,564,394, Cl. 148-1.500.
Daisenberger, Georg, 4,564,725, Cl. 179-8.00A.
Dirmeyer, Josef; Odemar, Norbert; and Winzer, Gerhard, 4,564,260, Cl. 350-96.160.
Falckenberg, Richard; and Grabmaier, Josef, 4,563,979, Cl. 118-694.000.
Foell, Helmut; Grabmaier, Josef; and Falckenberg, Richard, 4,563,976, Cl. 118-401.000.
Golser, Hans, 4,564,948, Cl. 372-61.000.
Hausele, Hans, 4,564,924, Cl. 365-200.000.
Klein, Klaus; and Schmitt, Reinhard, 4,564,250, Cl. 339-14.00R.
Kliemt, Wilfried; and Krones, Manfred, 4,564,884, Cl. 361-353.000.
Markert, Helmut; Rogler, Wolfgang; Kretzschman, Klaus; and Hauschildt, Klaus-Robert, 4,564,651, Cl. 524-589.000.
Mattelin, Antoon, 4,564,739, Cl. 219-121.0LH.
Nilsson, Kenth; and Bolmgren, Jan, 4,564,851, Cl. 346-140.00R.
Peruth, Gunther; and Lenz, Michael, 4,564,820, Cl. 331-62.000.
Rekewitz, Rudolf; and Wambach, Hermann, 4,564,305, Cl. 400-605.000.
Rumpel, Peter, 4,564,184, Cl. 270-39.000.
Schoen, Josef; and Hoffmann, Rudolf, 4,564,417, Cl. 156-633.000.
Veith, Werner, 4,564,790, Cl. 315-169.400.
Wiechert, Edelbert; and Lehmann, Herbert, 4,563,956, Cl. 105-29.00R.
Wiehler, Wolf, 4,564,788, Cl. 315-3.600.
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Sikander, Ake; Biorkman, Ake; and Jonsson, Gunther, to Lumalampan Aktiebolag. Device for the recovery of mercury. 4,564,174, Cl. 266-149.000.
Silaeva, Anna A., administrator: *See—*
Dobatkin, Vladimir I.; Eskin, Georgy I.; Borovikova, Stella I.; Malinovsky, Robert R.; Junyshev, Viktor K.; Matveev, Alexandr I.; Makarov, Gennady S.; Danilkin, Viktor A.; Andreev, Andrei D.; Bondarev, Boris I.; Shvetsov, Petr N.; Khodakov, Pavel E.; Cherepok, Gennady V.; Baranchikov, Vladimir M.; Silaeva, Petr N., deceased; and Silaeva, Anna A., administrator, 4,564,059, Cl. 164-478.000.
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Sills, Andy B.; and Sills, Cecil M., to Anaheim Foundry Company. Elastic gasket pipe coupling for pressurized plumbing systems. 4,564,220, Cl. 285-236.000.
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Sim, James W.: *See—*
Kucera, Gene H.; Smith, James L.; and Sim, James W., 4,564,567, Cl. 429-41.000.
Simoneau, Raynald; and Chincholle, Lucien, to Hydro-Quebec; and Centre National de la Recherche Scientifique. Method and apparatus for detection of erosive cavitation in an aqueous solution. 4,564,422, Cl. 204-1.00T.
Simonson, John L.: *See—*
Marinak, Michael J.; and Simonson, John L., 4,564,681, Cl. 546-345.000.
Sinar AG Schaffhausen: *See—*
Koch, Hans-Carl; Koch, Carl; and Gfeller, Karl, 4,564,277, Cl. 354-160.000.
Sinclair, William Y., to Aries Electronics, Inc. Crimp-on connector for flat cable. 4,564,253, Cl. 339-97.00C.
Singh, Gurnam, to International Telephone & Telegraph Corp. Transducer. 4,563,901, Cl. 73-706.000.
Sirotiak, Judd L.: *See—*
Rogers, Jerrold J.; and Sirotiak, Judd L., 4,564,849, Cl. 346-110.00R.
Sitte, Hellmuth, to C. Reichert Optische Werke AG. Specimen immersing device. 4,563,883, Cl. 62-514.00R.
Sitzler, Klaus; and Steisslinger, Kurt, to Eastman Kodak Company. Photographic camera. 4,564,279, Cl. 354-214.000.
Sjodin, Gunnar O. M., to Husqvarna Aktiebolag. Sewing machine drive control. 4,563,964, Cl. 112-275.000.
SKF Nova AB: *See—*
Asberg, Sture L., 4,564,243, Cl. 301-124.00R.
Skold, Rolf O.; von Dahn, Lars-Gosta; and Sterky, Anna K., to Berol Kemi AB. Method for the mechanical working of cast iron and an aqueous concentrate to be used in the method. 4,564,461, Cl. 252-32.500.
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Clelford, Douglas H.; Skonieczny, Joseph P.; and Murphy, Richard D., 4,564,908, Cl. 364-433.000.
Skraba, Frank W., to Phillips Petroleum Company. Apparatus for mixing of fluidized solids and fluids. 4,564,502, Cl. 422-140.000.
Slinn, David: *See—*
Murray, Peter; and Slinn, David, 4,564,393, Cl. 75-256.000.
Sloan Valve Company: *See—*
Billeter, Henry R., deceased, 4,564,246, Cl. 303-85.000.
Slodzian, Georges; Chaintreau, Marcel; and Dennebouy, Roger, to Cameca. Process and device for the ionic analysis of an insulating sample. 4,564,758, Cl. 250-309.000.
Smart, Doris M., administratrix: *See—*
Smart, Gerald, deceased, 4,564,353, Cl. 425-446.000.
Smart, Gerald, deceased (by Smart, Doris M., administratrix), to General Engineering Radcliffe 1979 Ltd. Continuous vulcanization and/or cross-linking apparatus. 4,564,353, Cl. 425-446.000.
Smerz, Frank G., to Cooper Industries. Lamp adapter for screw terminal lamps. 4,564,257, Cl. 339-145.00R.
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Maximenko, Alexandr V.; Tischenko, Elena G.; Torchilin, Vladimir P.; Smirnov, Vladimir N.; and Chazov, Evgeny I., 4,564,596, Cl. 435-177.000.
Smith, Gehrard J.: *See—*
Holly, Kenneth; and Smith, Gehrard J., 4,564,899, Cl. 364-200.000.

Smith International, Inc.: *See*—
Baugh, Benton F., 4,564,068, Cl. 166-123.000.
Smith, James H. Tool box mounting assembly. 4,564,167, Cl. 248-552.000.
Smith, James L.: *See*—
Kucera, Gene H.; Smith, James L.; and Sim, James W., 4,564,567, Cl. 429-41.000.
Smith, Lewis W.; and Warburton, Eric T., to Innopac Inc. Apparatus for packaging an edible liquid. 4,563,855, Cl. 53-128.000.
Smith, Stanley K.; and Rozsi, Donald J., to Eaton Corporation. Method and algorithms therefore for monitoring the performance of a tool and modifying the feed rate thereof. 4,564,910, Cl. 364-474.000.
Smith, Stanley K.; Rozsi, Donald J.; and Sabroff, Alvin M., to Easton Corporation. Method of monitoring a cutting tool by recognizing a sensed deviation in a mathematically smoothed function of force. 4,564,911, Cl. 364-474.000.
SmithKline Beckman Corporation: *See*—
Bagnall, Brian G.; and Gyurik, Robert J., 4,564,363, Cl. 604-891.000.
Smitt, Asbjorn, to Christian Rovsing A/S. Multiprocessor computer system. 4,564,900, Cl. 364-200.000.
SMS Hasenclever Maschinenfabrik GmbH: *See*—
Landwehr, Hubert, 4,563,889, Cl. 72-454.000.
SMS Schloemann-Siemag AG: *See*—
Bald, Wilfried; Rommen, Hans; and Stoy, Erich, 4,563,888, Cl. 72-243.000.
Societa Pneumatici Pirelli S.p.A.: *See*—
Ghilardi, Giuliano, 4,564,055, Cl. 152-450.000.
Societe Anonyme D.B.A.: *See*—
Gerard, Jean-Louis, 4,564,089, Cl. 188-73.380.
Societe Anonyme d'Explosifs et de Produits Chimiques: *See*—
Fremaux, Jacques M.; and Ehrlich, Hans W., 4,564,404, Cl. 149-21.000.
Societe de Paris et du Rhone, S.A.: *See*—
Mazzorana, Alfred B., 4,564,775, Cl. 310-62.000.
Societe Industrielle de Bellevaux Sibel: *See*—
Chauvigne, Michel, 4,563,911, Cl. 74-125.000.
Soendergaard, Joergen, to Danfoss A/S. Hydraulic actuator for control of valves. 4,563,941, Cl. 92-134.000.
Solar-Kist Corporation: *See*—
Binks, Chester J., 4,564,406, Cl. 156-63.000.
Solis s.r.l.: *See*—
Gazzarrini, Vinicio, 4,564,133, Cl. 223-39.000.
Sollner, Robert: *See*—
Pischinger, Franz; and Sollner, Robert, 4,563,982, Cl. 123-1.00A.
Somfai, Eva: *See*—
Ecsery, Zoltan; Somfai, Eva; Hermann nee Voros, Judit; Nagy, Lajos; Szabo, Gabor; Orban, Otto; and Arvai, Laslzo, 4,564,706, Cl. 564-376.000.
Sony Corporation: *See*—
Sato, Hiroki; Natori, Takehisa; and Nakano, Takao, 4,564,785, Cl. 313-422.000.
Sony Corporation Research Center: *See*—
Hayafuji, Yoshinari; Sawada, Akashi; Usui, Setsuo; and Shibata, Akikazu, 4,564,403, Cl. 148-171.000.
Sorber, Kenneth H., to Sorco Corporation. Apparatus for producing an acid compound. 4,564,504, Cl. 422-189.000.
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Sorber, Kenneth H., 4,564,504, Cl. 422-189.000.
Spaargaren, Robert, to Allied Corporation. Self-centering brake assembly incorporating a brake drum and automatic adjusting mechanism. 4,564,090, Cl. 188-331.000.
Spasskaya, Evdokia K.: *See*—
Busse-Machukas, Vladimir B.; Lvovich, Florenty I.; Spasskaya, Evdokia K.; Kubasov, Vladimir L.; Mazanko, Anatoly F.; Druzhinin, Ernest A.; Martynov, Alexandr N.; and Nelipa, Ljudmila N., 4,564,434, Cl. 204-290.00F.
Spector, George: *See*—
Atherton, Peter W.; and Spector, George, 4,564,173, Cl. 254-133.00R.
Kinyon, John P.; and Spector, George, 4,564,216, Cl. 280-770.000.
Spectro Industries, Inc.: *See*—
Wolpert, George H., Jr., 4,564,238, Cl. 297-430.000.
Spectron Development Laboratories: *See*—
Trolinger, James D., 4,564,949, Cl. 372-93.000.
Spencer, Alwyn, to Ciba-Geigy Corporation. Process for the Pd-catalyzed arylation of olefins with aryl halides. 4,564,479, Cl. 260-465.00H.
Spencer, Donald R. Container for fishing tackle. 4,563,834, Cl. 43-57.100.
Spengler, Walter. Electrostatic coating plant. 4,563,977, Cl. 118-623.000.
Spetsialnoe Konstruktorskoe Bjuro "Transprogress": *See*—
Alexandrov, Adolf M.; Tsimbler, Jury A.; Iljukhin, Vitaly G.; Yashin, Jury A.; and Kiselev, Igor V., 4,564,318, Cl. 406-192.000.
Spillman, William B., Jr., to Geo-Centers, Inc. Single mode optical fiber polarimetric stress sensor having optical common mode rejection. 4,564,289, Cl. 356-33.000.
Spindeler, Heinrich; Wackerbarth, Folkard; Kuhlmann, Horst; Dohle, Helmut; and Althaus, Horst, to Dr. C. Otto & Comp. GmbH. Coke oven battery. 4,564,420, Cl. 202-139.000.
Spindeler, Heinz; Wackerbarth, Folkard; and Halbherr, Gerd, to Dr. C. Otto & Comp. G.m.b.H. Nozzle plate construction for underjet coke ovens. 4,564,419, Cl. 202-123.000.
SS Pharmaceutical Co., Ltd.: *See*—
Matsuda, Hideaki; Tatezaki, Ryohta; Mizuno, Hiroyuki; and Katori, Tatsuhiko, 4,564,615, Cl. 514-231.000.
Stacor Corporation: *See*—
Morcheles, Bernard, 4,564,886, Cl. 362-97.000.
Stafford, Donald C.: *See*—
Allo, Vincent F.; and Stafford, Donald C., 4,564,064, Cl. 165-118.000.
Stahlecker, Fritz; and Stahlecker, Hans, to Stahlecker, Hans; and Stahlecker, Fritz. Yarn piecing method and apparatus. 4,563,871, Cl. 57-263.000.
Stahlecker, Fritz, to Stahlecker, Fritz; and Stahlecker, Hans. Start spinning arrangement for an open end friction spinning machine. 4,563,872, Cl. 57-263.000.
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Stahlecker, Fritz; and Stahlecker, Hans, 4,563,871, Cl. 57-263.000.
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Stahler, Gerhard; Knauf, Werner; Sachse, Burkhard; and Walterstorfer, Anna, to Hoechst Aktiengesellschaft. (Di)thio-phosphoric and -phosphonic acid derivatives, and their use in plant protection. 4,564,611, Cl. 514-99.000.
Stahler, John P., to Robot Research, Inc. Fractional-cycle time/amplitude modulation. 4,564,823, Cl. 332-17.000.
Stahlkopf, Friedrich R. R., to Abel Pumpen GmbH. Device for regulating the pressure and feed volume of a diaphragm pump. 4,564,340, Cl. 417-388.000.
Standard Oil Company, The: *See*—
Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., 4,564,369, Cl. 44-2.000.
Standard Oil Company (Indiana): *See*—
Kaufman, R. Gilbert, 4,564,398, Cl. 148-6.310.
Udovich, Carl A.; and Edwards, Robert C., 4,564,688, Cl. 549-259.000.
Wennerberg, Arnold N., 4,564,702, Cl. 562-493.000.
Standard Oil Company (Ohio), The: *See*—
Desmond, Michael J.; and Pesa, Frederick A., 4,564,511, Cl. 423-277.000.
Standard Telephones and Cables, PLC: *See*—
Scovell, Peter D.; Rosser, Paul J.; and Tomkins, Gary J., 4,563,805, Cl. 29-571.000.
Stanford, John L.: *See*—
Still, Richard H.; Cawse, John L.; and Stanford, John L., 4,564,718, Cl. 585-350.000.
Stanton, Joseph J.: *See*—
Fieder, Donald W.; Stanton, Joseph J.; Fisher, Christopher E.; and Cutler, Orvid R., Jr., 4,564,666, Cl. 522-33.000.
Stanton, Robert L., to American Manufacturing Company, Inc. Rope with reduced lash-back construction. 4,563,869, Cl. 57-211.000.
Stapley, Keith D. Drill scope. 4,564,322, Cl. 408-16.000.
Star Farm Machinery Mfg. Co., Ltd.: *See*—
Ide, Katsuyuki; Yamada, Masatoshi; and Sasaki, Katsusuke, 4,564,073, Cl. 172-120.000.
Starr, William C.: *See*—
Garwood, William E.; Starr, William C.; and Walker, John W., 4,564,440, Cl. 208-87.000.
Stauffer Chemical Company: *See*—
Kearnan, James E., 4,564,670, Cl. 528-389.000.
Telschow, Jeffrey E., 4,564,687, Cl. 549-240.000.
Stavlo, Lars G., to AGA, A.B. Method and apparatus for transporting pressurized gas cylinders. 4,564,109, Cl. 206-597.000.
Steele, Robert E., to General Motors Corporation. Thermal liquid level detector. 4,564,834, Cl. 340-622.000.
Steffe, Harlan E. Log holder. 4,564,178, Cl. 269-17.000.
Steffes, Helmut: *See*—
Reinartz, Hans-Dieter; and Steffes, Helmut, 4,564,244, Cl. 303-6.00C.
Steger, Barry N., to Phillips Petroleum Company. Process for making mercapto alcohols. 4,564,710, Cl. 568-62.000.
Steifensand, Friedrich M. Seat arrangement. 4,564,237, Cl. 297-423.000.
Steiger, Uwe: *See*—
Siebeneiker, Gunter; Brunn, Hartmut; and Steiger, Uwe, 4,563,931, Cl. 84-1.160.
Stein Associates, Inc.: *See*—
Hwang, Yong Y., 4,563,945, Cl. 99-443.00C.
Stein, Hermann: *See*—
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, 4,564,485, Cl. 264-30.000.
Steinheuser, Peter: *See*—
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Steinko, Willi: *See*—
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Steisslinger, Kurt: *See*—
Sitzler, Klaus; and Steisslinger, Kurt, 4,564,279, Cl. 354-214.000.
Stephan, Wolfgang; and Rieker, Heinz, to Daimler-Benz Aktiengesellschaft. Device for altering gear-shifting sequence in relation to vehicle load. 4,564,906, Cl. 364-424.100.
Sterky, Anna K.: *See*—
Skold, Rolf O.; von Dahn, Lars-Gosta; and Sterky, Anna K., 4,564,461, Cl. 252-32.500.
Stern, Richard A.; and Babbitt, Richard W., to United States of America, Army. Precision cutting of millimeter wave ferrite materials. 4,564,000, Cl. 125-13.00R.
Stewart, Lester. Exercising device for lifting weights. 4,564,193, Cl. 272-118.000.

Stieglitz, Barry: *See*—
Goldberg, Israel; and Stieglitz, Barry, 4,564,594, Cl. 435-139.000.
Stijntjes, Theodorus G. W.: *See*—
Welzen, Jozef T. A. M.; Stijntjes, Theodorus G. W.; van der Meer, Aant B. D.; Lobel, Rudolf O. M.; and Nijhof, Berend J., 4,564,489, Cl. 264-58.000.
Still, Richard H.; Cawse, John L.; and Stanford, John L., to University of Manchester Institute of Science and Technology, The. Functionally terminated polymers from terpene monomers and their applications. 4,564,718, Cl. 585-350.000.
Stipe, James J. Attic Stairway insulating and sealing device. 4,563,845, Cl. 52-202.000.
Stock, Rodney D.: *See*—
Evans, Lawrence J.; Sheikh, Junaid; Stock, Rodney D.; and Turkowski, Kenneth E. J., 4,564,915, Cl. 364-521.000.
Stone, Kenneth W., to McDonnell Douglas Corporation. Automatic heliostat track alignment method. 4,564,275, Cl. 353-3.000.
Stops, Earl E.: *See*—
Grant, Edward L.; Stops, Earl E.; and Saltz, Edward, 4,564,165, Cl. 248-343.000.
Storz Instrument Company: *See*—
Hutchison, Stephen; Ritter, J. Alan; and Virkus, Mark, 4,564,018, Cl. 128-660.000.
Storz, Werner, to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co KG. Fluid friction clutch. 4,564,093, Cl. 192-58.00B.
Storz, Werner, to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG. Fluid friction clutch. 4,564,094, Cl. 192-58.00B.
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Straszewski, Klaus: *See*—
Baden, Hans; Kuhnemann, Klaus; Sedlmayr, Gerhard; Straszewski, Klaus; and Zeumer, Monika, 4,564,219, Cl. 280-808.000.
Streissle, Gert; Plempel, Manfred; Paessens, Arnold; Holmwood, Graham; and Buchel, Karl H., to Bayer Aktiengesellschaft. Triazole derivative as an antiviral agent. 4,564,622, Cl. 514-383.000.
Streschnak, Benno: *See*—
Altenschopfer, Theodor; Giesen, Walter; Schumann, Klaus; and Streschnak, Benno, 4,564,535, Cl. 427-285.000.
Strichman, George A.; Dulis, Edward J.; Narasimhan, Kalatur S. V. L.; and Lizzi, Thomas, to Crucible Materials Corporation. Method for producing iron-silicon alloy articles. 4,564,401, Cl. 148-104.000.
Studt, William L.; Riley, Richard L.; and Douglas, George H., to William H. Rorer, Inc. Amidinoureas substituted in both the urea and amidino nitrogen positions. 4,564,640, Cl. 514-598.000.
Stull, Dean P.; and Bennett, Raymond E. Heat detection apparatus. 4,563,973, Cl. 116-218.000.
Stumbo, Ernest: *See*—
Montgomery, Douglas J.; Goldstein, Leonard H.; and Stumbo, Ernest, 4,564,141, Cl. 236-20.00R.
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Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co KG: *See*—
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Storz, Werner, 4,564,094, Cl. 192-58.00B.
Sugano, Kazuhiko, to Nissan Motor Co., Ltd. Line pressure control of hydraulic control system for automatic transmission. 4,563,918, Cl. 74-869.000.
Suganuma, Kazuo, to Tokyo Shibaura Kenki Kabushiki Kaisha. Full adder. 4,564,921, Cl. 364-784.000.
Sugawara, Takahiro: *See*—
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Sughrue, Edward L., II: *See*—
Kukes, Simon G.; Sughrue, Edward L., II; and Hogan, Robert J., 4,564,441, Cl. 208-108.000.
Sugihara, Hirosada; Nishikawa, Kohei; and Ito, Katsumi, to Takeda Chemical Industries, Ltd. Condensed, seven-membered ring compounds and their use. 4,564,612, Cl. 514-211.000.
Sugihara, Masahiro: *See*—
Nakamura, Toshiyuki; Sugihara, Masahiro; Inaba, Tsutomu; and Kimura, Tadashi, 4,564,343, Cl. 418-55.000.
Sugimoto, Hachiro; Nakamura, Takaharu; Hamazo, Sachiyuki; and Daiku, Yoshiharu, to Eisai Co., Ltd. Theophylline and theobromine derivatives. 4,564,617, Cl. 514-265.000.
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Sugimoto, Tatsuyoshi: *See*—
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Sugiyama, Katsumi; Takeda, Hideo; Sato, Hiroko; Nonaka, Yuji; Oyama, Kiyotaka; and Kubo, Masashige, to Ajinomoto Co., Inc.; Toyo Soda Mfg. Co., Ltd.; and Sagami Chem. Rsch. Cntr. Method for reductive elimination of protecting groups. 4,564,471, Cl. 260-112.50K.
Sugiyama, Keiichi: *See*—
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Sugiyama, Yoshihide: *See*—
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Sullivan, Patrick F.; and Wakefield, Russell R. Spray-suppressant mud flap. 4,564,204, Cl. 280-154.50R.
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Grether, Paul; Brader, Kurt; and Keller, Bruno, 4,563,843, Cl. 52-172.000.
Mandrin, Charles, 4,564,515, Cl. 423-648.00A.
Sulzer Morat GmbH: *See*—
Kunde, Klaus; Grimm, Helmut; and Becker, Lorenz, 4,563,884, Cl. 66-93.000.
Sumerak, Joseph E.: *See*—
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Sumitomo Chemical Company, Limited: *See*—
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Konishi, Hiroyuki; Hashimoto, Shunichi; and Oshio, Hiromichi, 4,564,386, Cl. 71-103.000.
Okumura, Takuzo; Yanase, Masataka; and Kikui, Hitoshi, 4,564,545, Cl. 428-76.000.
Sumitomo Electric Industries, Ltd.: *See*—
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Sumitomo Metal Mining Co., Ltd.: *See*—
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Sumoto, Kunihiro: *See*—
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Sun Refining And Marketing Company: *See*—
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Sunada, Takuya, to Casio Computer Co., Ltd. Waveform data read signal generating apparatus. 4,563,932, Cl. 84-1.220.
Suncor, Inc.: *See*—
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Sundstrand Corporation: *See*—
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Sunkist Growers, Inc.: *See*—
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Sunstar K.K.: *See*—
Watanabe, Hajime; Tanaka, Yoshio; and Abe, Seiichi, 4,564,462, Cl. 252-134.000.
Suntory Ltd.: *See*—
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Surgikos, Inc.: *See*—
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Sutker, Burton J., to Ethyl Corporation. Halogenated polyol-ester neutralization agent. 4,564,697, Cl. 560-83.000.
Suttles, James M., to Mead Corporation, The. Post-panel connection for sheet metal furniture. 4,564,111, Cl. 211-189.000.
Suzuki, Kenji: *See*—
Hirai, Yoichi; Fujii, Tsunenori; Koto, Kaoru; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Okabe, Yoshiaki; Kitamura, Teruo; Yokokura, Hisao; Hattori, Shintaroo; Mukoh, Akio; and Sato, Mikio, 4,564,694, Cl. 560-1.000.
Suzuki, Koji; Kuroda, Kouki; and Nagahira, Jyoji, to Canon Kabushiki Kaisha. Image formation apparatus including means for detecting and controlling image formation condition. 4,564,287, Cl. 355-14.00D.
Suzuki, Masayoshi: *See*—
Saigo, Kazuhide; and Suzuki, Masayoshi, 4,564,576, Cl. 430-197.000.
Suzuki, Michiyo: *See*—
Terashima, Shiro; Kimura, Yoshikazu; Suzuki, Michiyo; Matsumoto, Teruyo; and Abe, Rumiko, 4,564,674, Cl. 536-6.400.
Suzuki, Osamu: *See*—
Oishi, Kengo; and Suzuki, Osamu, 4,564,157, Cl. 242-199.000.
Suzuki, Takashi; Shinohara, Koichi; Odagiri, Masaru; and Fujita, Takashi, to Matsushita Electric Industrial Co., Ltd. Magnetic recording media and process for fabricating the same. 4,564,549, Cl. 428-141.000.
Suzuki, Yasuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Singly fed circularly polarized microstrip antenna. 4,564,842, Cl. 343-700.0MS.
Suzuki, Yasuo: *See*—
Mori, Kinji; Suzuki, Yasuo; Orimo, Masayuki; Miyamoto, Shoji; and Ihara, Hirokazu, 4,564,102, Cl. 198-341.000.
Suzuki, Yoshihisa: *See*—
Kojima, Tosaku; Matsumoto, Kunio; and Suzuki, Yoshihisa, 4,564,261, Cl. 350-96.240.
Svajgl, Donald E. Temporary support for gutters. 4,564,182, Cl. 269-102.000.
Swart, Renier P.: *See*—
McKechnie, Ronald M. K.; and Swart, Renier P., 4,564,330, Cl. 414-612.000.
Swinkels, Godefridus M.: *See*—
Fairweather, Michael J.; Rockandel, Michael A.; Sadan, Abraham; and Swinkels, Godefridus M., 4,564,508, Cl. 423-189.000.
Sylla, Jurgen: *See*—
Hofmann, Wilfried; Lusch, Herbert; Rauffer, Walter; Zieran, Eberhard; and Sylla, Jurgen, 4,564,276, Cl. 353-55.000.

Syntex (U.S.A.) Inc.: *See*—
Briggs, Jonathan, 4,564,598, Cl. 436-501.000.
Synthelabo: *See*—
Kaplan, Jean P., 4,564,636, Cl. 514-567.000.
Szabo, Gabor: *See*—
Ecsery, Zoltan; Somfai, Eva; Hermann nee Voros, Judit; Nagy, Lajos; Szabo, Gabor; Orban, Otto; and Arvai, Laslzo, 4,564,706, Cl. 564-376.000.
Szporny, Laszlo : *See*—
Toth, Edit; Torley, Jozsef; Hajdu, Istvan; Gorog, Sander; Maderspach, Andrea; Hajos, Gyorgy; Szporny, Laszlo ; and Javor, Andras, 4,564,630, Cl. 514-478.000.
Tabata, Toshiyuki: *See*—
Takehara, Shin; and Tabata, Toshiyuki, 4,564,082, Cl. 180-312.000.
Tabushi, Iwao; and Kobuke, Yoshiaki, to Mitsubishi Chemical Industries Limited. Macrocyclic compounds. 4,564,690, Cl. 549-352.000.
Tachikawa Spring Co., Ltd.: *See*—
Hatsutta, Susumu; and Kosaka, Takayuki, 4,564,235, Cl. 297-284.000.
Tahata, Michio; Okamoto, Masao; and Enomoto, Hiroshi, to Honda Giken Kogyo Kabushiki. Variable venturi type carburetor. 4,564,482, Cl. 261-44.00B.
Taira, Kazuo; Sakamoto, Akira; Yamada, Muneki; Aizawa, Masanori; and Ueno, Hiroshi, to Toyo Seikan Kaisha, Ltd. Plastic laminate structure and vessel. 4,564,541, Cl. 428-35.000.
Tajima, Hatsuo: *See*—
Nakamura, Shunji; Kan, Fumitaka; Egami, Hidemi; Hosoi, Atsushi; Tajima, Hatsuo; and Nakahata, Kimio, 4,563,978, Cl. 118-658.000.
Takada, Juichiro. Safety belt retractor. 4,564,154, Cl. 242-107.40B.
Takada, Shigetaka; Makimura, Toshiro; and Matsubara, Mamoru, to Aisan Kogyo Kabushiki Kaisha. Electromagnetic fuel injector. 4,564,145, Cl. 239-585.000.
Takada, Shun: *See*—
Sasaki, Masao; Nishijima, Toyoki; Takada, Shun; Kadowaki, Takashi; and Onodera, Kaoru, 4,564,590, Cl. 430-551.000.
Takahashi, Genji: *See*—
Sato, Tadashi; Takahashi, Genji; and Inui, Yoshiaki, 4,564,754, Cl. 250-225.000.
Takahashi, Hiroyuki; and Yamamoto, Takashi, to Murata Manufacturing Co., Ltd. Piezoelectric filter. 4,564,825, Cl. 333-191.000.
Takahashi, Junji: *See*—
Funabashi, Tadashi; Takahashi, Junji; and Kato, Kyoichi, 4,564,930, Cl. 369-75.200.
Takahashi, Kenichi, to Nitsuko Limited. Time division switching network. 4,564,936, Cl. 370-58.000.
Takahashi, Mikio; and Nakayama, Motoichi, to Kyoho Machine Works, Ltd. Axial braking device. 4,564,088, Cl. 188-67.000.
Takahashi, Toshinori; Tsumiyama, Hisanori; Okano, Keigo; and Iwabuchi, Yoshitaka, to Victor Company of Japan, Ltd. Rotary magnetic head device. 4,564,876, Cl. 360-107.000.
Takahashi, Toshio: *See*—
Kurabayashi, Katsuhiko; Kinoshita, Hidefumi; Saito, Hitoshi; and Takahashi, Toshio, 4,564,675, Cl. 536-18.100.
Takami, Toshihiro: *See*—
Ikuta, Yasuhiro; and Takami, Toshihiro, 4,564,168, Cl. 248-638.000.
Takasago Perfumery Co., Ltd.: *See*—
Watanabe, Hajime; Tanaka, Yoshio; and Abe, Seiichi, 4,564,462, Cl. 252-134.000.
Yagi, Misao; and Akutagawa, Susumu, 4,564,708, Cl. 568-14.000.
Takashima, Akira: *See*—
Yoshino, Tsunemi; and Takashima, Akira, 4,564,796, Cl. 318-696.000.
Takashima, Shuji, to Kabushiki Kaisha Yamagataya Nori Ten. Method for manufacturing processed foodstuffs from algae as materials. 4,564,526, Cl. 426-262.000.
Takasu, Masayuki: *See*—
Yoshino, Hisakazu; Takasu, Masayuki; and Kuroiwa, Junji, 4,564,291, Cl. 356-125.000.
Takasugi, Wasao: *See*—
Yonezawa, Seiji; Horikoshi, Tatsuo; Tsuyoshi, Toshiaki; and Takasugi, Wasao, 4,564,929, Cl. 369-44.000.
Takatsuji, Masamoto: *See*—
Shimada, Tamotsu; Shinbo, Chiaki; Horiuchi, Hideyuki; and Takatsuji, Masamoto, 4,564,012, Cl. 128-303.100.
Takeda Chemical Industries, Ltd.: *See*—
Nagase, Hiroshi; and Sato, Yasuo, 4,564,639, Cl. 514-594.000.
Sugihara, Hirosada; Nishikawa, Kohei; and Ito, Katsumi, 4,564,612, Cl. 514-211.000.
Tsukamoto, Kyozo; Hinuma, Shuji; and Onda, Haruo, 4,564,593, Cl. 435-91.000.
Takeda, Hideo: *See*—
Sugiyama, Katsumi; Takeda, Hideo; Sato, Hiroko; Nonaka, Yuji; Oyama, Kiyotaka; and Kubo, Masashige, 4,564,471, Cl. 260-112.50K.
Takehara, Shin; and Tabata, Toshiyuki, to Nissan Motor Co., Ltd. Structure for supporting a power unit for a vehicle. 4,564,082, Cl. 180-312.000.
Takei, Humihiko: *See*—
Omori, Mamoru; and Takei, Humihiko, 4,564,490, Cl. 264-65.000.
Takekoshi, Kenji: *See*—
Ohgami, Tadashi; Naitoh, Zenjiro; Saotome, Haruo; Takekoshi, Kenji; and Saitoh, Kimio, 4,564,531, Cl. 426-589.000.
Takemae, Mikio; Watanabe, Sakuji; and Okubo, Yuji, to Nippon Kogaku K.K. Signal selector for automatic exposure apparatus of camera. 4,564,281, Cl. 354-442.000.
Takemoto, Toyoki: *See*—
Sakai, Hiroyuki; Takemoto, Toyoki; Kawakita, Kenji; Fujita, Tsutomu; and Akiyama, Atsuko, 4,563,807, Cl. 29-591.000.
Takeuchi, Tokunari: *See*—
Kondo, Kunio; Haga, Katutoshi; and Takeuchi, Tokunari, 4,564,321, Cl. 407-36.000.
Takigawa, Tetsuo; Ibata, Koichi; Okada, Masafumi; Mizuno, Masao; and Nishida, Takashi, to Kuraray Co., Ltd. Polyprenyl compounds and method of producing the same. 4,564,477, Cl. 260-405.500.
Tamada, Shigeharu: *See*—
Tanaka, Tatsuyoshi; Nagami, Kazuyoshi; Tamada, Shigeharu; and Nakagawa, Kazuyuki, 4,564,619, Cl. 514-312.000.
Tamag Basel AG: *See*—
Egri, Laszlo, 4,564,031, Cl. 131-353.000.
Tamamura, Toshiaki: *See*—
Morita, Masao; Tanaka, Akinobu; Imamura, Saburo; Tamamura, Toshiaki; and Kogure, Osamu, 4,564,579, Cl. 430-270.000.
Tamura, Takeshi: *See*—
Kato, Shinichi; Tamura, Takeshi; Ambo, Tsugio; and Shimazawa, Katsuji, 4,564,252, Cl. 339-91.00R.
Tamura, Tatsuo: *See*—
Yamada, Yasuo; Saito, Junichi; Tamura, Tatsuo; and Sakawa, Shinji, 4,564,638, Cl. 514-585.000.
Tamura, Toshinari; Iwamoto, Hidenori; Yoshida, Makoto; and Yamamoto, Minoru, to Yamanouchi Pharmaceutical Co., Ltd. 4-Substituted-2-azetidinone compound, process of producing the compounds, and medicaments containing the compounds. 4,564,609, Cl. 514-18.000.
Tanaka, Akinobu: *See*—
Morita, Masao; Tanaka, Akinobu; Imamura, Saburo; Tamamura, Toshiaki; and Kogure, Osamu, 4,564,579, Cl. 430-270.000.
Tanaka, Naoki: *See*—
Hama, Hiroaki; Imanishi, Masami; and Tanaka, Naoki, 4,563,879, Cl. 62-160.000.
Tanaka, Shigeo; and Onodera, Kaoru, to Konishiroku Photo Industry Co., Ltd. Silver halide color photographic material. 4,564,591, Cl. 430-567.000.
Tanaka, Tatsuyoshi; Nagami, Kazuyoshi; Tamada, Shigeharu; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. Carbostyril derivative. 4,564,619, Cl. 514-312.000.
Tanaka, Toshiaki, to Nissan Motor Company, Limited. Fuel injection pump for an internal combustion engine. 4,564,341, Cl. 417-462.000.
Tanaka, Yoko: *See*—
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,564,474, Cl. 260-397.200.
Tanaka, Yoshio: *See*—
Watanabe, Hajime; Tanaka, Yoshio; and Abe, Seiichi, 4,564,462, Cl. 252-134.000.
Tandy Corporation: *See*—
Leininger, Steven, 4,564,902, Cl. 364-200.000.
Tani, Hideki; Arai, Makoto; Sasaki, Takayuki; Hayama, Kazuhide; and Yamashita, Akira, to Sanyo-Kokusaku Pulp Co., Ltd.; and Mitsubishi Yuka Fine Chemicals Co., Ltd. Recording sheets for water base ink and process for making the same. 4,564,560, Cl. 428-411.100.
Tanizawa, Tetsu; Omichi, Hitoshi; and Mitono, Yoshiharu, to Fujitsu Limited. Semiconductor gate array device having an improved interconnection structure. 4,564,773, Cl. 307-445.000.
Tannenbaum, Michael A.: *See*—
Heyer, Robert E.; and Tannenbaum, Michael A., 4,564,118, Cl. 220-8.000.
Tanunliong, Arnold L.: *See*—
Lewin, Ian; Heinisch, Richard V.; and Tanunliong, Arnold L., 4,564,888, Cl. 362-147.000.
Tanyolac, Necmi; and Labows, John N., to Tanyolac, Necmi. Methods and apparatus for detection and identification of volatile materials and odors. 4,563,893, Cl. 73-23.000.
Tarassoff, Serge, to Pomagalski S.A. Chairlift or gondola lift including friction drive wheels. 4,563,955, Cl. 104-168.000.
Tashiro, Korefumi; and Akiyama, Hiroyuki, to Hitachi, Ltd. Binary logic device having input and output alternating signals. 4,564,774, Cl. 307-479.000.
Tate, Warren L., to Frito-Lay, Inc. Product orienting conveyor. 4,563,944, Cl. 99-355.000.
Tateishi, Hiroshi; and Hashimoto, Susumu, to Tokyo Shibaura Denki Kabushiki Kaisha. Amorphous alloy for magnetic head and magnetic head with an amorphous alloy. 4,564,399, Cl. 148-31.550.
Tatemoto, Minoru: *See*—
Kumagai, Naotake; and Tatemoto, Minoru, 4,564,215, Cl. 280-707.000.
Tatezaki, Ryohta: *See*—
Matsuda, Hideaki; Tatezaki, Ryohta; Mizuno, Hiroyuki; and Katori, Tatsuhiko, 4,564,615, Cl. 514-231.000.
Tatsuno, Kimio; and Arimoto, Akira, to Hitachi Ltd. Optical system for semiconductor laser. 4,564,268, Cl. 350-409.000.
Tawara, Kanji: *See*—
Nikaido, Tadanobu; Miyahara, Norio; and Tawara, Kanji, 4,564,926, Cl. 365-230.000.
Tayco Developments, Inc.: *See*—
Taylor, Paul H., 4,564,048, Cl. 138-31.000.
Taylor, David, to BIP Chemical Limited. Urea-formaldehyde resin manufacture. 4,564,667, Cl. 528-256.000.
Taylor, Lawrence H. Solar energy collecting system. 4,564,002, Cl. 126-417.000.
Taylor, Paul H., to Tayco Developments, Inc. Pressure accumulator with composite helical spring. 4,564,048, Cl. 138-31.000.
Taylor, Vernon W. Multiple lead threading. 4,564,225, Cl. 285-333.000.

TDK Corporation: *See—*
Ezaki, Joichiro; Kanai, Hiroshi; and Kitahara, Yoshimi, 4,564,877, Cl. 360-114.000.
Tektronix, Inc.: *See—*
Rogers, Jerrold J.; and Sirotiak, Judd L., 4,564,849, Cl. 346-110.00R.
Wilke, William G.; and Reiney, Michael G., 4,564,804, Cl. 324-103.00P.
Telkefonaktiebolaget LM Ericsson: *See—*
Nordin, Jerry K. G., 4,564,722, Cl. 174-35.0GC.
Telschow, Jeffrey E., to Stauffer Chemical Company. Process for preparing substituted phthalic anhydrides. 4,564,687, Cl. 549-240.000.
Tennenhouse, Gerald J.: *See—*
Runkle, Franklin D.; and Tennenhouse, Gerald J., 4,563,924, Cl. 82-1.00C.
Terashima, Shiro; Kimura, Yoshikazu; Suzuki, Michiyo; Matsumoto, Teruyo; and Abe, Rumiko, to Sagami Chemical Research Center. Process for an anthracycline derivative, and an anthracyclinone derivative useful for the process. 4,564,674, Cl. 536-6.400.
Terry, Vincent G., Jr., to General Electric Company. Dynamoelectric machine stator using cylindrical keybars. 4,564,779, Cl. 310-258.000.
Teschendorf, Hans-Jurgen: *See—*
Seitz, Werner; Teschendorf, Hans-Jurgen; Michel, Alfred; Traut, Martin; Hofmann, Hans P.; and Kreiskott, Horst, 4,564,641, Cl. 514-650.000.
Teshirogi, Koichi: *See—*
Senoo, Masaharu; Noma, Keizi; Saruta, Akira; Yoshizaki, Masanori; Teshirogi, Koichi; and Yaegashi, Kouei, 4,564,777, Cl. 310-156.000.
Tesser, Igino, to Nava & C. S.p.A. Boot particularly for sportswear. 4,563,825, Cl. 36-131.000.
Tetjukhin, Vladislav V.: *See—*
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.
Tetra Pak Developpement S.A.: *See—*
Reil, Wilhelm, 4,564,139, Cl. 229-5.500.
Texaco Inc.: *See—*
Walker, Robert N., 4,564,811, Cl. 324-307.000.
Texas Instruments Incorporated: *See—*
Werking, Paul M., 4,564,953, Cl. 377-52.000.
Thelen, Edmund; Black, Daniel N., III; and Kiley, Thomas L. Resilient paving composition for playfields sports fields and recreation areas. 4,564,310, Cl. 404-31.000.
Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft mbH. Tamping head with limiting stop for tool reciprocation. 4,563,953, Cl. 104-12.000.
Thiebaut, Bernard A., to Inmont Corporation. Lithographic water based fountain solution concentrates. 4,563,952, Cl. 101-451.000.
Thieme, Gerd. Lounger or reclining chair made from a floatable plastic body. 4,564,240, Cl. 297-457.000.
Thirion de Briel, Jacques, to Valeo. Pulley assembly. 4,564,357, Cl. 474-14.000.
Thoma, Friedrich X.: *See—*
Kammerer, Gerd; and Thoma, Friedrich X., 4,564,827, Cl. 335-92.000.
Thomas Josef Heimbach GmbH & Co.: *See—*
Best, Walter, 4,564,551, Cl. 428-222.000.
Thompson, Edward, to Hortico Limited. Marking device for use with an animal marking harness. 4,563,980, Cl. 119-1.000.
Thomson-CSF: *See—*
Lange , Francois, 4,564,932, Cl. 369-286.000.
Van Zanten, Francois, 4,564,855, Cl. 357-46.000.
Tibbals, Edward C., Jr., to Loeffler, William R. Wobble type axial speed reducer apparatus. 4,563,915, Cl. 74-800.000.
Tiede, Ralf: *See—*
Knop, Hans-Georg; Nowak, Michael; Redecker, Friedrich; and Tiede, Ralf, 4,564,859, Cl. 358-75.000.
Tiedemann, Helmut: *See—*
Crumbach, Richard; Schilde, Heinz-Josef; and Tiedemann, Helmut, 4,564,408, Cl. 156-212.000.
Tiedemann, Wolfgang, to VICO Kemisk Tekniska Fabrik AB. Purification apparatus. 4,564,447, Cl. 210-220.000.
Tiemann, Eckhard: *See—*
Becher, Dieter; Konig, Christian; Tiemann, Eckhard; Czwalinna, Hans; and Hagen, Wilhelm, 4,564,513, Cl. 423-415.00A.
Tietje, Andreas, to Ensign-Bickford Industries, Inc. Corona discharge device. 4,564,759, Cl. 250-324.000.
TII Industries, Inc.: *See—*
Charych, Arthur, 4,564,767, Cl. 307-66.000.
Timby, Ernest A.; Walsh, Rodney H.; and Wood, Robert S., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Fuel supply apparatus. 4,564,333, Cl. 415-86.000.
Tischenko, Elena G.: *See—*
Maximenko, Alexandr V.; Tischenko, Elena G.; Torchilin, Vladimir P.; Smirnov, Vladimir N.; and Chazov, Evgeny I., 4,564,596, Cl. 435-177.000.
Tkalich, Vasily A.: *See—*
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.
Tkotz, Gunter: *See—*
Eschner, Axel; Ganz, Rudolf; Tkotz, Gunter; Stein, Hermann; and Kreuels, Klaus, 4,564,485, Cl. 264-30.000.
Tokiwa Seiki Industrial Company, Limited: *See—*
Ono, Yoshihiko, 4,563,837, Cl. 51-34.00R.
Tokunaga, Toshimichi; Kanai, Seita; and Anan, Yoshiaki, to Mazda Motor Corporation. Suspension system for motor vehicle having variable suspension characteristics. 4,564,214, Cl. 280-707.000.
Tokuyama, Keiichi: *See—*
Masuda, Mitsuhiro; Naito, Shotaro; Tokuyama, Keiichi; and Watanabe, Shizuhisa, 4,564,905, Cl. 364-424.000.
Tokyo Kogaku Kikai Kabushiki Kaisha: *See—*
Yoshino, Hisakazu; Takasu, Masayuki; and Kuroiwa, Junji, 4,564,291, Cl. 356-125.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Arafune, Yasunari, 4,564,868, Cl. 360-19.100.
Fukushi, Yukihiro, 4,564,792, Cl. 318-254.000.
Homma, Kazumoto; and Watanabe, Masaharu, 4,564,416, Cl. 156-617.0SP.
Kazuharu, Odawara, 4,564,850, Cl. 346-137.000.
Kitamura, Shunji, 4,564,870, Cl. 360-51.000.
Maeguchi, Kenji, 4,564,583, Cl. 430-312.000.
Oda, Yasuyuki; and Iwase, Kazuhiko, 4,564,872, Cl. 360-78.000.
Ogura, Mitsugi, 4,564,854, Cl. 357-23.600.
Suzuki, Yasuo, 4,564,842, Cl. 343-700.0MS.
Tateishi, Hiroshi; and Hashimoto, Susumu, 4,564,399, Cl. 148-31.550.
Yahata, Haruki, 4,564,940, Cl. 370-124.000.
Tokyo Shibaura Kenki Kabushiki Kaisha: *See—*
Suganuma, Kazuo, 4,564,921, Cl. 364-784.000.
Tollar, James E., to Dow Chemical Company, The. Annular heat exchanger. 4,564,063, Cl. 165-109.100.
Tomihashi, Nobuyuki: *See—*
Ohmori, Akira; Tomihashi, Nobuyuki; Inukai, Hiroshi; and Shimizu, Yoshiki, 4,564,717, Cl. 568-843.000.
Tomite, Tosio; Ogasawara, Nobuhiko; Isii, Kaniti; and Kanamaru, Hisanobu, to Hitachi, Ltd. Magneto device for generating signals. 4,564,776, Cl. 310-70.00R.
Tomiyama, Tsuyoshi, to Kotobuki Seiyaku Company, Limited. Substituted aminothiazoles and method of manufacturing the same. 4,564,678, Cl. 544-367.000.
Tomizu, Motoyuki; and Nagata, Kunio, to Omron Tateisi Electronics Co. Electrical switch. 4,564,730, Cl. 200-16.00B.
Tomkins, Gary J.: *See—*
Scovell, Peter D.; Rosser, Paul J.; and Tomkins, Gary J., 4,563,805, Cl. 29-571.000.
Tomlinson, Christopher J.; and Green, Howard H., to Burroughs Corporation. Method of performing a sequence of related activities via multiple asynchronously intercoupled digital processors. 4,564,901, Cl. 364-200.000.
Tomono, Makoto: *See—*
Morita, Hideaki; Kasuya, Takahira; Yamakawa, Goichi; Tomono, Makoto; Furuta, Isao; and Tsuneyoshi, Minoru, 4,564,573, Cl. 430-109.000.
Tooka, Takuzo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for controlling production in a spinning machine. 4,563,873, Cl. 57-264.000.
Topa, Robert D.: *See—*
Henning, Timothy P.; and Topa, Robert D., 4,564,426, Cl. 204-44.600.
Toray Industries, Inc.: *See—*
Ohno, Kiyotaka; Nagase, Hiroshi; Ishikawa, Mamoru; Matsumoto, Kazuhisa; and Nishio, Shintaro, 4,564,620, Cl. 514-337.000.
Torchilin, Vladimir P.: *See—*
Maximenko, Alexandr V.; Tischenko, Elena G.; Torchilin, Vladimir P.; Smirnov, Vladimir N.; and Chazov, Evgeny I., 4,564,596, Cl. 435-177.000.
Torley, Jozsef: *See—*
Toth, Edit; Torley, Jozsef; Hajdu, Istvan; Gorog, Sander; Maderspach, Andrea; Hajos, Gyorgy; Szporny, Laszlo ; and Javor, Andras, 4,564,630, Cl. 514-478.000.
Toshiba Ceramics Co., Ltd.: *See—*
Homma, Kazumoto; and Watanabe, Masaharu, 4,564,416, Cl. 156-617.0SP.
Toth, Edit; Torley, Jozsef; Hajdu, Istvan; Gorog, Sander; Maderspach, Andrea; Hajos, Gyorgy; Szporny, Laszlo ; and Javor, Andras, to Richter Gedeon Vegyeszeti Gyar Rt. Carbamyloxybenzhydrol derivatives and pharmaceutical compositions containing them. 4,564,630, Cl. 514-478.000.
Touhsaent, Robert E.; Wagner, John R., Jr.; and Clauson, Melvil B., to Mobil Oil Corporation. Oriented multi-layer heat sealable film. 4,564,558, Cl. 428-349.000.
Touze, Francois. Hot-blast nozzles, particularly for blast furnaces. 4,564,143, Cl. 239-132.300.
Towmotor Corporation: *See—*
Melocik, Grant C.; and Wible, John E., 4,564,085, Cl. 187-9.00R.
Toyo Kogyo Co., Ltd.: *See—*
Ihara, Kazunori, 4,564,608, Cl. 502-355.000.
Toyo Seikan Kaisha, Ltd.: *See—*
Taira, Kazuo; Sakamoto, Akira; Yamada, Muneki; Aizawa, Masanori; and Ueno, Hiroshi, 4,564,541, Cl. 428-35.000.

Toyo Soda Mfg. Co., Ltd.: *See*—
Sugiyama, Katsumi; Takeda, Hideo; Sato, Hiroko; Nonaka, Yuji; Oyama, Kiyotaka; and Kubo, Masashige, 4,564,471, Cl. 260-112.50K.
Toyoda Koki Kabushiki Kaisha: *See*—
Yomogida, Toshihiko; and Yamashita, Tsuyoshi, 4,564,913, Cl. 364-474.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Akatsuka, Takao; Nakano, Jiro; Ishibashi, Takao; and Kawaguchi, Masao, 4,563,991, Cl. 123-440.000.
Hori, Shinichi; Ohnishi, Yasuichi; Ueda, Masahiro; and Noba, Masahiko, 4,564,916, Cl. 364-551.000.
Ikuta, Yasuhiro; and Takami, Toshihiro, 4,564,168, Cl. 248-638.000.
Kobayashi, Fumiaki; and Ito, Yoshiyasu, 4,563,992, Cl. 123-458.000.
Ujihashi, Michiaki, 4,563,994, Cl. 123-491.000.
Traber, Jorg: *See*—
Boltze, Karl-Heinz; Davies, Margaret A.; Junge, Bodo; Schuurman, Teunis; and Traber, Jorg, 4,564,613, Cl. 514-222.000.
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Neri, Carlo; Giroldini, Villiam; Rinaldi, Antonio; Traversoni, Mario; and Clerici, Mario, 4,564,691, Cl. 549-462.000.
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Trichell, John; and Wheeler, Ronald M. Disposable clipper head. 4,563,814, Cl. 30-225.000.
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Ito, Eiichi, 4,564,307, Cl. 403-140.000.
TRW United-Carr Limited: *See*—
Barnett, Barry R. M., 4,564,163, Cl. 248-71.000.
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Fudenberg, Herman H.; and Tsang, Kwong Y., 4,564,517, Cl. 424-9.000.
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Tsutsui, Shinji, to Canon Kabushiki Kaisha. Semiconductor exposure apparatus. 4,564,284, Cl. 355-30.000.
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Tulin, Nikolai A.: *See*—
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.
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Loker, Ernest B.; and Turner, Donald H., 4,564,222, Cl. 285-243.000.
Turner, Tomie L. Toothpick holder. 4,564,035, Cl. 132-90.000.
Tusinski, Joseph, to Coburn Optical Industries, Inc. Dynamically variable oscillating adjustment assembly. 4,563,916, Cl. 74-829.000.
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Buzzanca, Giovanni; Ronchetti, Camillo; Uberti, Franco; and Anzani, Renato, 4,564,436, Cl. 204-400.000.
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Udovich, Carl A.; and Edwards, Robert C., to Standard Oil Company (Indiana). Process for the production of maleic anhydride by the oxidation of butane. 4,564,688, Cl. 549-259.000.
Ueba, Yoshinobu; and Miyake, Shinichi, to Sumitomo Electric Industries, Ltd. Process for producing plastic optical fiber. 4,564,263, Cl. 350-96.340.
Ueda, Ikuo; Nagano, Masanobu; and Akahane, Atsushi, to Fujisawa Pharmaceutical Co., Ltd. α-Aryl-α-pyridylalkanoic acid derivatives, process for preparation thereof and pharmaceutical composition comprising the same. 4,564,621, Cl. 514-357.000.
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Ueda, Tsunehisa; and Natsuume, Tadao, to Nippon Zeon Co Ltd. Dispersant for aqueous slurry of coal. 4,564,371, Cl. 44-51.000.
Uehara, Makoto, to Nippon Kogaku K.K. Projection lens. 4,564,269, Cl. 350-432.000.
Ueno, Hideo, to Brother Kogyo Kabushiki Kaisha. Typewriter with text memory. 4,564,301, Cl. 400-63.000.
Ueno, Hideo, to Brother Kogyo Kabushiki Kaisha. Typewriter with resetting function for margin position and tab position. 4,564,304, Cl. 400-279.000.
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Ueshima, Michio: *See*—
Yoneda, Tadahiro; and Ueshima, Michio, 4,564,607, Cl. 502-209.000.
Uhl, Robert J.: *See*—
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Underdown, David R.; and Glaze, O. Howard, to Baker Oil Tools, Inc. Proppant charge and method. 4,564,459, Cl. 252-8.55R.
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Krude, Werner; and Jordan, Alfons, 4,564,242, Cl. 301-6.0CF.
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Briggs, John R.; O'Connor, George L.; and Robson, John H., 4,564,715, Cl. 568-867.000.
Brown, Geoffrey D., 4,564,349, Cl. 425-207.000.
Williams, Gary H.; and Karol, Frederick J., 4,564,660, Cl. 526-106.000.
Union Oil Company of California: *See*—
Deering, Roland F., 4,564,437, Cl. 208-11.00R.
Gritters, Gregory A.; Nellis, Walter E.; and Featherstone, John L., 4,564,298, Cl. 366-167.000.
Robinson, Paul R.; and Moorehead, Eric L., 4,564,603, Cl. 502-60.000.
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Birley, Stuart S.; and Roper, Philip E., 4,564,743, Cl. 219-137.00R.
Timby, Ernest A.; Walsh, Rodney H.; and Wood, Robert S., 4,564,333, Cl. 415-86.000.
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Air Force: *See*—
Kaplan, Philip D., 4,564,935, Cl. 370-38.000.

Powell, Norman F., 4,564,839, Cl. 343-5.0CM.
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Gilson, Russell A.; and Burke, Thomas F., 4,564,817, Cl. 330-286.000.
Stern, Richard A.; and Babbitt, Richard W., 4,564,000, Cl. 125-13.00R.
Winfree, Clarence H., 4,564,356, Cl. 434-29.000.
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Adams, Johnnie E.; and Jamieson, Donald R., 4,564,683, Cl. 548-521.000.
Faughnan, Brian W.; and Hanak, Joseph J., 4,564,808, Cl. 324-158.00R.
Hogan, Stephen J., 4,564,720, Cl. 136-256.000.
Kucera, Gene H.; Smith, James L.; and Sim, James W., 4,564,567, Cl. 429-41.000.
Reimann, George A., 4,564,391, Cl. 75-63.000.
Schuller, Ivan K.; Ketterson, John B.; and Banerjee, Indrajit, 4,564,564, Cl. 428-662.000.
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Kosmahl, Henry G., 4,564,787, Cl. 315-3.600.
Navy: *See—*
Goldstein, David, 4,564,501, Cl. 419-25.000.
Martin, Eugene C.; and De Fusco, Albert A., 4,564,663, Cl. 526-262.000.
U.S. Philips Corporation: *See—*
Chameroy, Pascal; and Decraemer, Alain, 4,564,863, Cl. 358-172.000.
Comberg, Albert, 4,564,866, Cl. 358-302.000.
Schijven, Lucas W. M., 4,564,874, Cl. 360-96.100.
Van Aller, Gerardus; and Kuhl, Walter H., 4,564,753, Cl. 250-213.0VT.
Van Dijk, Pieter, 4,564,812, Cl. 324-309.000.
Welzen, Jozef T. A. M.; Stijntjes, Theodorus G. W.; van der Meer, Aant B. D.; Lobel, Rudolf O. M.; and Nijhof, Berend J., 4,564,489, Cl. 264-58.000.
United States Steel Corporation: *See—*
Lucht, Wilbert A., 4,563,870, Cl. 57-223.000.
United Technologies Corporation: *See—*
Clelford, Douglas H.; Skonieczny, Joseph P.; and Murphy, Richard D., 4,564,908, Cl. 364-433.000.
Gruver, Gary A.; and Kunz, Harold R., 4,564,427, Cl. 204-98.000.
Unitek Corporation: *See—*
Dufrenne, Gerald, 4,564,735, Cl. 219-110.000.
Universal Pioneer Corporation: *See—*
Nakajima, Tohru, 4,564,867, Cl. 358-342.000.
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Still, Richard H.; Cawse, John L.; and Stanford, John L., 4,564,718, Cl. 585-350.000.
Uoi, Michitake: *See—*
Hayashi, Hiroshi; Matono, Koichi; Asahi, Satoshi; and Uoi, Michitake, 4,564,647, Cl. 523-211.000.
Uozumi, Akira, to Mitsubishi Denki Kabushiki Kaisha. Safety device for a passenger conveyor. 4,564,099, Cl. 198-323.000.
Urakami, Fukashi. Cleaning particle impinging device and air blast cleaning apparatus using said device. 4,563,840, Cl. 51-410.000.
Urban, Jorg: *See—*
Schill, Jurgen; Rupp, Werner; Schaff, Werner; and Urban, Jorg, 4,563,801, Cl. 29-156.80B.
Urban, Joseph J.; and Henderson, Norman L., to Hoechst-Roussel Pharmaceuticals Inc. Dosage dispensing unit. 4,564,129, Cl. 222-207.000.
Usui, Setsuo: *See—*
Hayafuji, Yoshinari; Sawada, Akashi; Usui, Setsuo; and Shibata, Akikazu, 4,564,403, Cl. 148-171.000.
USV Pharmaceutical Corp.: *See—*
Kantor, Martin L., 4,564,677, Cl. 544-164.000.
Utagawa, Ken, to Nippon Kogaku K.K. Correlation calculating apparatus. 4,564,919, Cl. 364-728.000.
Uytterhoeven, Herman J.; De Winter, Walter F.; and Marien, August M., to Agfa-Gevaert, N.V. Liquid developer for development of electrostatic images. 4,564,574, Cl. 430-115.000.
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Haarasilta, Asko, 4,564,524, Cl. 426-74.000.
Valentin, Jean P., to L'Etat Francais represented by Delegation Generale. Integrated infrared thermostat resonator. 4,564,744, Cl. 219-210.000.
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Thirion de Briel, Jacques, 4,564,357, Cl. 474-14.000.
Vallomy, John A., to Intersteel Technology, Inc. Method for continuous steelmaking. 4,564,388, Cl. 75-12.000.
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van Alst, Wilhelmus B. T., to Du Pont de Nemours, E. I., and Company. IDC Latching terminal. 4,564,254, Cl. 339-99.00R.
van Berkel, Bernardus P. J.: *See—*
Boulogne, Gerardus F.; and van Berkel, Bernardus P. J., 4,564,838, Cl. 340-825.500.
van Bogaert, Philippe, to N.V. Weefautomaten Picanol. Weft gripper drive for looms. 4,564,053, Cl. 139-449.000.
van Bonn, Hans: *See—*
Schrewe, Hans; Pleschiutschnigg, Fritz-Peter; van Bonn, Hans; Holter, Karl; and Wiegard, Gustav, 4,564,058, Cl. 164-72.000.
Vandame, Bertrand, to Precision Mechanique Labinal. Electrical contact element. 4,564,259, Cl. 339-258.00R.
Vander Giessen, Michael J.: *See—*
Hume, Robert M., III; LaBrash, Robert A.; and Vander Giessen, Michael J., 4,564,649, Cl. 524-13.000.
van der Meer, Aant B. D.: *See—*
Welzen, Jozef T. A. M.; Stijntjes, Theodorus G. W.; van der Meer, Aant B. D.; Lobel, Rudolf O. M.; and Nijhof, Berend J., 4,564,489, Cl. 264-58.000.
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Van Der Wal, Jan; and Nederpel, Gerardus L., to NAT Shipping Bagging Services Limited. Method of material distribution and apparatus for use in the method. 4,563,858, Cl. 53-418.000.
Van Dijk, Pieter, to U.S. Philips Corporation. Nuclear magnetic resonance tomography apparatus including a Faraday cage. 4,564,812, Cl. 324-309.000.
Vann, Roy R.; and Brieger, Emmet F., to GEO Vann, Inc. Well completion method and apparatus. 4,564,076, Cl. 175-4.520.
van Waveren, Karel C., to Vredestein N.V. Flexible tube for conveying a mixture of a liquid and a solid material. 4,564,319, Cl. 406-193.000.
Van Zanten, Francois, to Thomson CSF. High current PNP transistor forming part of an integrated monolithic circuit. 4,564,855, Cl. 357-46.000.
Vargas, Richard R.: *See—*
Chang, Man-Chium; Mao, Chung-Ling; and Vargas, Richard R., 4,564,664, Cl. 524-826.000.
Varian Associates, Inc.: *See—*
Wickersham, Charles E., 4,564,435, Cl. 204-298.000.
Vaughan, Anthony J., to Babcock Wire Equipment Limited. Continuous extrusion apparatus. 4,564,347, Cl. 425-79.000.
VDO Adolf Schindling AG: *See—*
Kant, Bernhard; and Jakobs, Hasko, 4,564,881, Cl. 361-284.000.
Vedernikov, Gennady G.: *See—*
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.
Veith, Werner, to Siemens Aktiengesellschaft. Flat electron beam tube having a gas discharge as electron source. 4,564,790, Cl. 315-169.400.
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Jerlich, Werner J.; Kaiserfeld, Hans; and Kugler, Alfred, 4,564,566, Cl. 428-687.000.
Vermilye, Michael L., to Boeing Company, The. Thrust reverser blocker door assembly. 4,564,160, Cl. 244-110.00B.
Vickers, Incorporated: *See—*
Siegrist, Ronald, 4,563,939, Cl. 91-275.000.
VICO Kemisk Tekniska Fabrik AB: *See—*
Tiedemann, Wolfgang, 4,564,447, Cl. 210-220.000.
Victor Company of Japan, Ltd.: *See—*
Ihara, Ryuji, 4,564,875, Cl. 360-96.600.
Takahashi, Toshinori; Tsumiyama, Hisanori; Okano, Keigo; and Iwabuchi, Yoshitaka, 4,564,876, Cl. 360-107.000.
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Vigil, Thomas R.: *See—*
Holmes, George; and Keyser, Frank, 4,564,350, Cl. 425-313.000.
Virgilio, Joseph A.; and Freudewald, Joachim E., to Givaudan Corporation. Process for the preparation of 2,4,5-trichlorophenol under acidic conditions. 4,564,714, Cl. 568-776.000.
Virkus, Mark: *See—*
Hutchison, Stephen; Ritter, J. Alan; and Virkus, Mark, 4,564,018, Cl. 128-660.000.
Visser, Berend L., to Koninklijke Emballage Industrie Van Leer B.V. Method and apparatus for packaging products. 4,563,859, Cl. 53-450.000.
Vleminckx, Victor R.: *See—*
Huybrechts, Jozef T.; and Vleminckx, Victor R., 4,564,648, Cl. 523-423.000.
Vogel Tool & Die: *See—*
Kinsley, Robert J., 4,563,927, Cl. 83-319.000.
von Dahn, Lars-Gosta: *See—*
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von Sivers, Rolf: *See—*
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Vredestein N.V.: *See—*
van Waveren, Karel C., 4,564,319, Cl. 406-193.000.
Vroomen, Albert, to Franz Muller GmbH & Co. Corduroy cutting machine. 4,563,798, Cl. 26-10.00C.
Vuilleumier, Raymond; and Weiss, Paul-Charles, to Centre Electronique Horloger S.A. Miniature shutter type display device with multiplexing capability. 4,564,836, Cl. 340-783.000.
W F Products Corporation: *See—*
Hasty, William E., 4,563,847, Cl. 52-219.000.
W. Schlafhorst & Co.: *See—*
Kohlen, Karl-Heinz, 4,564,228, Cl. 289-2.000.
Rohner, Joachim, 4,564,147, Cl. 242-35.50A.
WABCO Westinghouse Compagnia Freni S.p.A.: *See—*
Barberis, Dario, 4,564,245, Cl. 303-15.000.
Wachter, Ernst: *See—*
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Wacker-Chemie GmbH: *See*—
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Wackerbarth, Folkard: *See*—
Spindeler, Heinrich; Wackerbarth, Folkard; Kuhlmann, Horst; Dohle, Helmut; and Althaus, Horst, 4,564,420, Cl. 202-139.000.
Spindeler, Heinz; Wackerbarth, Folkard; and Halbherr, Gerd, 4,564,419, Cl. 202-123.000.

Waddingtons Limited: *See*—
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Wagner, John R., Jr.; and Clauson, Melvil B., to Mobil Oil Corporation. Oriented multi-layer heat sealable film. 4,564,559, Cl. 428-349.000.

Wagner, John R., Jr.: *See*—
Touhsaent, Robert E.; Wagner, John R., Jr.; and Clauson, Melvil B., 4,564,558, Cl. 428-349.000.

Wahle, Gunter; Ludszeweit, Dieter; and Heitmann, Uwe, to Hauni-Werke Korber & Co. KG. Method of and apparatus for building a tobacco stream. 4,564,026, Cl. 131-84.300.

Wakefield, Russell R.: *See*—
Sullivan, Patrick F.; and Wakefield, Russell R., 4,564,204, Cl. 280-154.50R.

Waki, Kouichirou: *See*—
Higashi, Haruki; Waki, Kouichirou; Fukuiri, Masaru; and Yukitomo, Kazuo, 4,563,917, Cl. 74-866.000.

Wakui, Takeo: *See*—
Ohgushi, Masuhito; Ohtsuka, Hiroshi; Asaba, Tsutomu; Hoshi, Hironobu; Goshokubo, Kenichi; Wakui, Takeo; Ishii, Kiminori; Ohno, Masashi; and Okada, Yukio, 4,564,557, Cl. 428-333.000.

Walker, John G. Sail with retractable air directing element. 4,563,970, Cl. 114-103.000.

Walker, John W.: *See*—
Garwood, William E.; Starr, William C.; and Walker, John W., 4,564,440, Cl. 208-87.000.

Walker, Robert N., to Texaco Inc. RF Core analyzing means and method. 4,564,811, Cl. 324-307.000.

Wallace, John. Compact pliers with large, adjustable jaw span. 4,563,921, Cl. 81-373.000.

Walsh, Rodney H.: *See*—
Timby, Ernest A.; Walsh, Rodney H.; and Wood, Robert S., 4,564,333, Cl. 415-86.000.

Walter, Dietmar: *See*—
Bauer, Wilhelm; Berger, Josef; Dahm, Horst; Klemm, Hans; Schmid, Peter; Seidl, Horst; and Walter, Dietmar, 4,564,883, Cl. 361-334.000.

Waltersdorfer, Anna: *See*—
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Wambach, Hermann: *See*—
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Wang, Sophia; and Millard, Alan A., to Nalco Chemical Company. Styrene-dialkyl maleate copolymers as dewaxing agents. 4,564,438, Cl. 208-33.000.

Warburton, Eric T.: *See*—
Smith, Lewis W.; and Warburton, Eric T., 4,563,855, Cl. 53-128.000.

Warner, Dean C.; and Marek, James R., to Cooper Industries, Inc. Wound-in sleeve fuse cutout tube construction. 4,564,830, Cl. 337-246.000.

Warner, Patrick G.: *See*—
Hallman, Robert W.; Langlais, Eugene L.; and Warner, Patrick G., 4,564,589, Cl. 430-524.000.

Watanabe, Hajime; Tanaka, Yoshio; and Abe, Seiichi, to Takasago Perfumery Co., Ltd.; and Sunstar K.K. Menthol soap. 4,564,462, Cl. 252-134.000.

Watanabe, Masaharu: *See*—
Homma, Kazumoto; and Watanabe, Masaharu, 4,564,416, Cl. 156-617.0SP.

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Takemae, Mikio; Watanabe, Sakuji; and Okubo, Yuji, 4,564,281, Cl. 354-442.000.

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Vuilleumier, Raymond; and Weiss, Paul-Charles, 4,564,836, Cl. 340-783.000.

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Schommler, Manfred; and Dirks, Arthur, 4,563,930, Cl. 83-862.000.

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Yoshino, Tsunemi; and Takashima, Akira, 4,564,796, Cl. 318-696.000.

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Maley, Gerald A.; and Westcott, Douglas W., 4,564,772, Cl. 307-443.000.

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McNair, John R., 4,564,188, Cl. 271-103.000.

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Ringlee, David R.; and Gaddis, Paul G., 4,563,929, Cl. 83-840.000.

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Kumar, Mahesh; and Whartenby, James C., 4,564,816, Cl. 330-149.000.

Wheable, Desmond; and Attwood, Michael J., to Transamerica Delaval Inc. Analog to digital converters for converting a plurality of different input signals. 4,564,831, Cl. 340-347.0AD.

Wheeler, Daryl. Torque transmitting device. 4,563,922, Cl. 81-441.000.

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Clark, Paul M., 4,563,790, Cl. 15-337.000.
Karklys, Joseph, 4,564,733, Cl. 219-10.770.

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Sanderson, Gary M.; and White, Charles M., 4,564,856, Cl. 358-10.000.

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Wible, John E.: *See*—
Melocik, Grant C.; and Wible, John E., 4,564,085, Cl. 187-9.00R.

Wickersham, Charles E., to Varian Associates, Inc. Target assembly for sputtering magnetic material. 4,564,435, Cl. 204-298.000.

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De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,564,446, Cl. 210-167.000.
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Willi Studer AG: *See*—
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William H. Rorer, Inc.: *See*—
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Williams, Gary H.; and Karol, Frederick J., to Union Carbide Corporation. Use of alkylaluminum compounds and hydroxyl-containing compounds to initiate polymerization of ethylene with chromium oxide catalysts. 4,564,660, Cl. 526-106.000.
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Wilson, Ronald E. Transport aid for A-frame stepladder. 4,564,203, Cl. 280-47.320.
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Kin, Lai, 4,564,033, Cl. 132-39.000.
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Eschmann, Heinz, 4,563,864, Cl. 53-570.000.
Rogge, Dieter, 4,563,949, Cl. 101-174.000.
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Winkelmann, Wolfgang, to Maschinenbau Grieshaber GmbH & Co. Apparatus comprising a machining tool for machining rollers. 4,563,838, Cl. 51-58.000.
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Winter, Robert A., to Sencore, Inc. Oscilloscope with integrated frequency counter and method of measuring frequency. 4,564,805, Cl. 324-121.00R.
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WM Regler AB: *See*—
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Wong, Ching-Ping, to AT&T Technologies, Inc. Silicone encapsulated devices. 4,564,562, Cl. 428-447.000.
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Woodruff, Keith; and Brandli, Eugene, to American Cyanamid Co. Insect feeding station. 4,563,836, Cl. 43-131.000.
Woolley, Richard N.; Glover, Neal; and Williams, Richard, to Apple Computer, Inc. Error detection system. 4,564,941, Cl. 371-2.000.
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Yahata, Haruki, to Tokyo Shibaura Denki Kabushiki Kaisha. Broad band network system. 4,564,940, Cl. 370-124.000.
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Yamauchi, Teruo; and Oyama, Yoshishige, to Hitachi, Ltd. Fuel feeding apparatus. 4,563,993, Cl. 123-478.000.
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Yoneda, Tadahiro; and Ueshima, Michio, to Nippon Shokubai Kagaku Kogyo Co. Ltd. Heteropolyacid-type catalyst composition containing whiskers. 4,564,607, Cl. 502-209.000.
Yonezawa, Seiji; Horikoshi, Tatsuo; Tsuyoshi, Toshiaki; and Takasugi, Wasao, to Hitachi, Ltd. Information recording and reproducing apparatus with tracking control by sampling. 4,564,929, Cl. 369-44.000.
Yong, Raymond N.; and Sethi, Amar J., to Suncor, Inc. Hydrolyzed cassava starch flocculants. 4,564,004, Cl. 127-33.000.
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Young, Ian R.; and Bailes, David R., to Picker International, Ltd. Nuclear magnetic resonance method and apparatus. 4,564,813, Cl. 324-311.000.
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Zabarilo, Oleg S.: *See*—
Paton, Boris E.; Melnik, Gary A.; Latash, Jury V.; Zabarilo, Oleg S.; Tkalich, Vasily A.; Gedzun, Sergei E.; Odintsova, Ljudmila G.; Agarkov, Gavriil D.; Tetjukhin, Vladislav V.; Tulin, Nikolai A.; Vedernikov, Gennady G.; Pozdeev, Nikolai P.; Azbukin, Valery D.; Okorokov, Georgy N.; and Letnikov, Nikolai V., 4,564,740, Cl. 219-121.0PM.
Zaffaroni, Alejandro; and Wong, Patrick S. L., to ALZA Corporation. Active agent dispenser. 4,564,364, Cl. 604-897.000.
Zahnradfabrik Friedrichshafen, AG.: *See*—
Ilg, Rudolf, 4,564,338, Cl. 417-310.000.
Zeroni, Ludwig: *See*—
Pertzsch, Albert; Liepold, August; Brunner, Hubert; and Zeroni, Ludwig, 4,564,120, Cl. 220-337.000.
Zeumer, Monika: *See*—
Baden, Hans; Kuhnemann, Klaus; Sedlmayr, Gerhard; Straszewski, Klaus; and Zeumer, Monika, 4,564,219, Cl. 280-808.000.
Ziegler, Friedrich: *See*—
Krieg, Rudolf; and Ziegler, Friedrich, 4,564,783, Cl. 313-113.000.
Ziegler, Gerhard; Gregotsch, Karl; and von Sivers, Rolf, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Suction pipe apparatus for an internal-combustion engine. 4,563,984, Cl. 123-52.00M.
Ziegler, Jeffrey L.: *See*—
Garretson, Jay H.; Lazor, Thomas E.; Merva, John J.; Nestor, Charles R.; Plyler, Robert G.; Seiffert, Raymond C.; and Ziegler, Jeffrey L., 4,564,258, Cl. 339-220.00R.
Zieran, Eberhard: *See*—
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Zilly, Gunter: *See*—
Gansel, Eduard; Schaal, Gunter; Schneider, Helmut; Schramm, Heribert; Seidel, Eberhard; and Zilly, Gunter, 4,564,181, Cl. 269-88.000.
Zimmer, Herbert; Dathe, Ingo; Hoffmann, Reinhard; Hora, Petr; and Wortmann, Franz X., to Dornier Gesellschaft mit besehrankter Haftung. Aircraft propeller. 4,564,337, Cl. 416-223.00R.
Zimmerman, Jos.: *See*—
Beyer, Walter; and Beyer, Joachim, 4,563,961, Cl. 112-222.000.
Zimmerman, Larry D.: *See*—
Blaske, Paul S.; Zimmerman, Larry D.; Calderon, Arthur; and Longworth, Leroy L., 4,564,585, Cl. 430-313.000.
Zrostlik, Francis L., to Iowa Mold Tooling Company, Inc. Bead loosening tool. 4,564,057, Cl. 157-1.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF JANUARY, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aktieselskabet Niro Atomizer: *See—*
Nielsen, Kaj, Re. 32,064, Cl. 239-224.000.

Baxter Travenol Laboratories, Inc.: *See—*
Ralston, Philip G., Jr.; Miller, Joe A.; and Cammarata, Frank, III, Re. 32,065, Cl. 604-408.000.

Cammarata, Frank, III: *See—*
Ralston, Philip G., Jr.; Miller, Joe A.; and Cammarata, Frank, III, Re. 32,065, Cl. 604-408.000.

Miller, Joe A.: *See—*
Ralston, Philip G., Jr.; Miller, Joe A.; and Cammarata, Frank, III, Re. 32,065, Cl. 604-408.000.

Nielsen, Kaj, to Aktieselskabet Niro Atomizer. Atomizer wheel for the atomization of suspensions of hard-wearing materials. Re. 32,064, Cl. 239-224.000.

Ralston, Philip G., Jr.; Miller, Joe A.; and Cammarata, Frank, III, to Baxter Travenol Laboratories, Inc. Molded collapsible solution container. Re. 32,065, Cl. 604-408.000.

Samodovitz, Arthur J. Multiple field acoustic focusser. Re. 32,062, Cl. 73-642.000.

Schultz, Gregory K. Motorcycle safety-release back rest. Re. 32,063, Cl. 180-268.000.

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Adler Instrument Company: *See—*
Davison, John A.; and Kellar, Robert J., 282,205, Cl. D24-26.000.

Alex Synn AG: *See—*
Hopfer, Hans, 282,126, Cl. D6-367.000.

Alonzo, Patrick R. Baseball fan. 282,125, 1-14-86, Cl. D3-3.000.

Atkins, Warren L., to International Telephone & Telegraph Corp. Instrument case molding. 282,150, 1-14-86, Cl. D10-103.000.

Atlas Sound Division Of American Trading & Production Corp.: *See—*
Seebinger, Frederick L., 282,163, Cl. D14-37.000.

Barrows, George F., II; and Barrows, Niela P. Insulated ignition switch cover. 282,161, 1-14-86, Cl. D13-32.000.

Barrows, Niela P.: *See—*
Barrows, George F., II; and Barrows, Niela P., 282,161, Cl. D13-32.000.

Bayerische Motoren Werke A.G.: *See—*
Kerschbaum, Hans, 282,157, Cl. D12-181.000.

Beck, Michael S., to Security Comfort Co. Inc. Shoe heel guard. 282,122, 1-14-86, Cl. D2-314.000.

Bell, Benjamin H.; Maloof, Gregory T.; and Reeve, Charles W. Refrigerated container for alcoholic beverages and mixers or the like. 282,128, 1-14-86, Cl. D6-469.000.

Bell, Stanley; and Perry, Gordon R. Exercycle. 282,190, 1-14-86, Cl. D21-194.000.

Bell, Stanley; and Ferry, Gordon R. Exercycle. 282,191, 1-14-86, Cl. D21-194.000.

Berry, Frederick E.; and Tobelmann, Ralph G., to Emulex Corporation. Connector mounting device for extending I/O connections to a personal computer. 282,160, 1-14-86, Cl. D13-24.000.

Billings, Guy R. Glove with illuminable finger. 282,124, 1-14-86, Cl. D2-365.000.

Bott, John A. Vehicle luggage carrier. 282,155, 1-14-86, Cl. D12-157.000.

Boudreaux, Mark D., to CPC Products Corp. Toy vehicle. 282,186, 1-14-86, Cl. D21-128.000.

Brillo, Jerome; and Dooley, Harry H., to TLS Systems, Inc. Self-powered drogue light. 282,210, 1-14-86, Cl. D26-28.000.

Brown, Wilbert C., to TIE/Communications, Inc. Telephone set. 282,165, 1-14-86, Cl. D14-53.000.

Brown, Wilbert C., to TIE/Communications, Inc. Base for a telephone set. 282,167, 1-14-86, Cl. D14-62.000.

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Canon Kabushiki Kaisha: *See—*
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Chambers, John A.; and Collison, Alan, to Dobson Park Industries Limited. Combined printing toy and case therefore. 282,185, 1-14-86, Cl. D21-127.000.

Chase, Richard A.: *See—*
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Cincinnati Incorporated: *See—*
Uroshevich, Miroslav, 282,176, Cl. D15-123.000.

Claman, Mike T. Chair frame. 282,131, 1-14-86, Cl. D6-500.000.

Cole, Mark T.; and Sherman, Charles F., to Nielsen Moulding Design Corp. Display frame hanger. 282,145, 1-14-86, Cl. D8-373.000.

Collison, Alan: *See—*
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Colonial Art Company, Inc.: *See—*
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Combi Co., Ltd.: *See—*
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CPC Products Corp.: *See—*
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Crowe, Scott D. Support frame for a combined seat and table unit. 282,130, 1-14-86, Cl. D6-491.000.

Cruze, Tyrone A.; and Panzica, Nace J., to Custom Chrome. Motorcycle footrest. 282,154, 1-14-86, Cl. D12-114.000.

Cuisinarts, Inc.: *See—*
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Cunard, Joel C.; and Ziegler, William H., Jr., to Hedstrom Corporation. Riding toy. 282,187, 1-14-86, Cl. D21-134.000.

Custom Chrome: *See—*
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Data Packaging Corporation: *See—*
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Davis, Howard, to 8 Track Shoe Corporation. Shoe outsole. 282,123, 1-14-86, Cl. D2-320.000.

Davison, John A.; and Kellar, Robert J., to Adler Instrument Company. Surgical rasp. 282,205, 1-14-86, Cl. D24-26.000.

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Doman, Donald W., to Kohler Co. Pedestal lavatory. 282,201, 1-14-86, Cl. D23-61.000.

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Durand, Jean-Jacques. Tumbler or similar article. 282,134, 1-14-86, Cl. D7-15.000.

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8 Track Shoe Corporation: *See—*
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Ellersick, Russell R. Portable heater device. 282,202, 1-14-86, Cl. D23-77.000.

Ellesse International S.p.A.: *See—*
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Fossella, Gregory F.; Karalevicz, John M.; Mailer, Werner H.; and Milliser, Charles E., to Genicom Corporation. Cabinet for an input-output device. 282,173, 1-14-86, Cl. D14-100.000.

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Glaxo Group Limited: *See*—
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Grenier, Louis. Tent. 282,192, 1-14-86, Cl. D21-253.000.
Grimes, Gary E., to U.S. Philips Corporation. Loudspeaker. 282,162, 1-14-86, Cl. D14-33.000.
Gronborg, Jan; and Persson, Lars, to Svensk Sportutveckling AB. Face protecting mask. 282,117, 1-14-86, Cl. D2-233.000.
Gullikson, Donald A. Wine cooler. 282,138, 1-14-86, Cl. D7-300.000.
Hamilton, Richard G., to Colonial Art Company, Inc. Tray clip. 282,181, 1-14-86, Cl. D20-43.000.
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Haro, Robert B., to Haro Designs Inc. Vented number plate. 282,180, 1-14-86, Cl. D20-13.000.
Haug, Andreas, to Hans Grohe GmbH & Co. Wall shower. 282,200, 1-14-86, Cl. D23-57.000.
Hayman, Eugene L., Jr. Fulcrumed tool for a shovel or similar article. 282,141, 1-14-86, Cl. D8-10.000.
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Holt, Gregory C. Speculum. 282,204, 1-14-86, Cl. D24-18.000.
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Jost, Arthur. Bromine dispenser for hot tubs. 282,196, 1-14-86, Cl. D23-3.000.
Kalen, Ragnar. Medical holeplate. 282,207, 1-14-86, Cl. D24-33.000.
Kamali, Norma. High heeled calf length sneaker. 282,119, 1-14-86, Cl. D2-275.000.
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Kamali, Norma. High heeled ankel top sneaker. 282,121, 1-14-86, Cl. D2-285.000.
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Kikuchi, Nobuo; and Fushimoto, Hideo, to Canon Kabushiki Kaisha. Data transmitting optical coupler. 282,174, 1-14-86, Cl. D14-114.000.
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Larson, Kenneth W., to Motorola, Inc. Portable housing for a mobile telephone, radio transceiver and battery pack. 282,169, 1-14-86, Cl. D14-65.000.
Leonard, Bruce A.; and Hood, Lawrence E., to Eastman Kodak Company. Chemical analyzer. 282,203, 1-14-86, Cl. D24-1.100.
Le Vier, Anthony W., to R.P.O.M.C.T. Limited Partnership. Aircraft throttle handle. 282,156, 1-14-86, Cl. D12-174.000.
Liptak, Richard M., to Integral Design, Inc. Sign card holder. 282,182, 1-14-86, Cl. D20-43.000.
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Santner, Dean K. Shelf or similar article. 282,132, 1-14-86, Cl. D6-511.000.
Sasaki, Keiji. Stuffed toy figure. 282,193, 1-14-86, Cl. D21-160.000.
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Smith, Ivan A., to Village Nominees Pty. Ltd. Decorator rod pulley housing. 282,133, 1-14-86, Cl. D6-580.000.
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Wallace, Robert H.; and Gravitt, Jerry R., 282,153, Cl. D12-14.000.
Tsubaki, Hiroyuki; Kawata, Yoshiaki; Itoh, Yutaka; and Uematsu, Toyoyuki, to Matsushita Electric Industrial Co., Ltd. Television receiver. 282,170, 1-14-86, Cl. D14-80.000.
Tsubaki, Hiroyuki: *See—*
Uematsu, Toyoyuki; Kawata, Yoshiaki; Harada, Yoshinori; and Tsubaki, Hiroyuki, 282,171, Cl. D14-80.000.
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Tsubaki, Hiroyuki; Kawata, Yoshiaki; Itoh, Yutaka; and Uematsu, Toyoyuki, 282,170, Cl. D14-80.000.
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Smith, Ivan A., 282,133, Cl. D6-580.000.
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Whitman, Robert E. Hub for flexible lawn mower blades. 282,175, 1-14-86, Cl. D15-17.000.
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Williams, James E.; and Kozlowski, Edward R., to Cuisinarts, Inc. Storage rack. 282,137, 1-14-86, Cl. D7-73.000.
Wright, Bert H. Mud flap or the like. 282,158, 1-14-86, Cl. D12-185.000.
Wu, Jim: *See—*
Hu, Lee-Ping, 282,197, Cl. D23-25.000.
Yoshimura, Reijiro, to Kyowa Hakko Kogyo Co., Ltd. Bottle. 282,148, 1-14-86, Cl. D9-378.000.
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Jelly, Robert G., 5,634, Cl. 20.000.
Jelly, Robert G., 5,635, Cl. 20.000.
Jelly, Robert G., 5,636, Cl. 26.000.
Jelly, Robert G., to E. G. Hill Co., Inc. Rose plant named Jelpirofor. 5,632, 1-14-86, Cl. 14.000.
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Williams, Ernest D., 5,631, Cl. 9.000.
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CLASSIFICATION OF PATENTS

ISSUED JANUARY 14, 1986

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

85 4,563,776
108 4,563,777

CLASS 4

192 4,563,780
542 4,563,781
4,563,782
576 4,563,783

CLASS 5

37 R 4,563,784
472 4,563,785

CLASS 8

94.1 R 4,564,366
159 4,563,786

CLASS 12

142 N 4,563,787

CLASS 15

312 R 4,563,788
323 4,563,789
337 4,563,790

CLASS 17

11 4,563,791
33 4,563,792
58 4,563,793

CLASS 19

48 R 4,563,794

CLASS 23

295 S 4,564,367

CLASS 24

19 4,563,795
563 4,563,796
641 4,563,797

CLASS 26

10 C 4,563,798

CLASS 28

272 4,563,799

CLASS 29

26 A 4,563,800
156.8 B 4,563,801
157 R 4,563,802
213 R 4,563,803
229 4,563,804
571 4,563,805
4,563,806
591 4,563,807
596 4,563,808
623 4,563,809
749 4,563,810
827 4,563,811
857 4,563,812

CLASS 30

161 4,563,813
225 4,563,814
296 A 4,563,815
343 4,563,816
386 4,563,817
417 4,563,818

CLASS 33

30.4 4,563,819
180 R 4,563,820
265 4,563,821
367 4,563,822
558 4,563,823
568 4,563,824

CLASS 36

131 4,563,825

CLASS 37

97 4,563,826

CLASS 42

70 R 4,563,827
84 4,563,828
94 4,563,829

CLASS 43

4.5 4,563,830
44.91 4,563,831
44.99 4,563,832
54.1 4,563,833
57.1 4,563,834
69 4,563,835
131 4,563,836

CLASS 44

1 D 4,564,368
2 4,564,369
38 4,564,370
51 4,564,371
71 4,564,372

CLASS 51

34 R 4,563,837
58 4,563,838
334 4,563,839
410 4,563,840
411 4,563,841

CLASS 52

169.9 4,563,842
172 4,563,843
192 4,563,844
202 4,563,845
208 4,563,846
219 4,563,847
235 4,563,848
4,563,849
396 4,563,850
656 4,563,851
743 4,563,852

CLASS 53

48 4,563,853
118 4,563,854
128 4,563,855
138 A 4,563,856
399 4,563,857
418 4,563,858
450 4,563,859
4,563,860
453 4,563,861
552 4,563,862
556 4,563,863
570 4,563,864

CLASS 55

16 4,564,373
57 4,564,374
259 4,564,375
486 4,564,376
488 4,564,377

CLASS 56

228 4,563,866
249 4,563,867
341 4,563,868

CLASS 57

211 4,563,869
223 4,563,870
263 4,563,871
4,563,872
264 4,563,873
406 4,563,874

CLASS 60

39.23 4,563,875
527 4,563,876

CLASS 62

80 4,563,877
115 4,563,878
160 4,563,879
234 4,563,880
457 4,563,881
476 4,563,882
514 R 4,563,883

CLASS 65

3.12 4,564,378
135 4,564,379
163 4,564,380

CLASS 66

93 4,563,884

CLASS 70

97 4,563,885
118 4,563,886

CLASS 71

88 4,564,381
4,564,382
92 4,564,383
4,564,384
98 4,564,385
103 4,564,386

CLASS 72

84 4,563,887
149 4,563,891
243 4,563,888
454 4,563,889
469 4,563,890

CLASS 73

19 4,563,892
23 4,563,893
24 4,563,894
61 R 4,563,895
290 R 4,563,896
587 4,563,897
606 4,563,898
626 4,563,899
642 Re.32,062
644 4,563,900
706 4,563,901
708 4,563,902
727 4,563,903
861.12 4,563,904
862.36 4,563,905
862.58 4,563,906
864.16 4,563,907

CLASS 74

2 4,563,908
5.5 4,563,909
125 4,563,911
493 4,563,912
606 R 4,563,913
687 4,563,914
800 4,563,915
820 4,563,910
829 4,563,916
866 4,563,917
869 4,563,918

CLASS 75

0.5 A 4,564,387
12 4,564,388
38 4,564,389
51.7 4,564,390
63 4,564,391
128 V 4,564,392
256 4,564,393

CLASS 81

3.55 4,563,919
177.8 4,563,920
373 4,563,921
441 4,563,922
466 4,563,923

CLASS 82

1 C 4,563,924
28 R 4,563,925

CLASS 83

107 4,563,926
319 4,563,927
821 4,563,928
840 4,563,929
862 4,563,930

CLASS 84

1.16 4,563,931
1.22 4,563,932
267 4,563,933
313 4,563,934

CLASS 86

17 4,563,935

CLASS 89

11 4,563,936
185 4,563,937

CLASS 91

25 4,563,938
275 4,563,939

CLASS 92

106 4,563,940
134 4,563,941

CLASS 98

2.16 4,563,942
115.1 4,563,943

CLASS 99

355 4,563,944
443 C 4,563,945
450 4,563,946

CLASS 101

122 4,563,947
128 4,563,948
174 4,563,949
178 4,563,950
216 4,563,951
451 4,563,952

CLASS 104

12 4,563,953
138 G 4,563,954
168 4,563,955

CLASS 105

29 R 4,563,956
418 4,563,957

CLASS 110

219 4,563,958
281 4,563,959

CLASS 112

121.15 4,563,960
222 4,563,961
262.1 4,563,962
266.1 4,563,963
275 4,563,964
302 4,563,965
455 4,563,966

CLASS 114

39 4,563,967
56 4,563,968
102 4,563,969
103 4,563,970
132 4,563,971
293 4,563,972

CLASS 116

218 4,563,973

CLASS 118

66 4,563,974
320 4,563,975
401 4,563,976
623 4,563,977
658 4,563,978
694 4,563,979

CLASS 119

1 4,563,980
96 4,563,981

CLASS 123

1 A 4,563,982
41.21 4,563,983
52 M 4,563,984
90.31 4,563,985
90.38 4,563,986
179 B 4,563,987
196 S 4,563,988
339 4,563,989
438 4,563,990
440 4,563,991
458 4,563,992
478 4,563,993
491 4,563,994
494 4,563,995
502 4,563,996
559 4,563,997
568 4,563,998

CLASS 124

50 4,563,999

CLASS 125

13 R 4,564,000

CLASS 126

390 4,564,001
417 4,564,002
427 4,564,003

CLASS 127

33 4,564,004

CLASS 128

66 4,564,005
79 4,564,006
92 A 4,564,007
94 4,564,008
152 4,564,009
156 4,564,010
303.1 4,564,011
4,564,012
335.5 4,564,013
344 4,564,014
455 4,564,015
645 4,564,016
653 4,564,017
660 4,564,018
4,564,019
677 4,564,020
716 4,564,021
748 4,564,022
785 4,564,023
788 4,564,024

CLASS 130

27 R 4,564,025

CLASS 131

84.3 4,564,026
4,564,027
84.4 4,564,028
94 4,564,029
336 4,564,030
353 4,564,031

CLASS 132

33 R 4,564,032
39 4,564,033
73 4,564,034
90 4,564,035

CLASS 133

3 A 4,564,036
4,564,037

CLASS 136

256 4,564,720

CLASS 137

101 4,564,038
4,564,039
454.6 4,564,040
565 4,564,041
614.05 4,564,042
624.18 4,564,043
625.24 4,564,044
625.43 4,564,045
625.65 4,564,046
627.5 4,564,047

CLASS 138

31 4,564,048

CLASS 139

33 4,564,049
97 4,564,050
425 A 4,564,051
4,564,052
449 4,564,053

CLASS 141

329 4,564,054

CLASS 148

1.5 4,564,394
4 4,564,395
4,564,396
6.15 R 4,564,397
6.31 4,564,398
31.55 4,564,399
103 4,564,400
104 4,564,401
127 4,564,402
171 4,564,403

CLASS 149

21 4,564,404
4,564,405

CLASS 152

427 4,564,056
450 4,564,055

CLASS 156

63 4,564,406
147 4,564,407
212 4,564,408
219 4,564,409
356 4,564,410
387 4,564,411
484 4,564,412
504 4,564,413
541 4,564,414
604 4,564,415
617 SP 4,564,416
633 4,564,417

CLASS 157

1 4,564,057

CLASS 162

368 4,564,418

CLASS 164

72 4,564,058
478 4,564,059

CLASS 165

98 4,564,060
104.33 4,564,061
108 4,564,062
109.1 4,564,063
118 4,564,064
158 4,564,065
4,564,066
163 4,564,067

CLASS 166

123 4,564,068
288 4,564,069
295 4,564,070

CLASS 168

19 4,564,071

CLASS 172

13 4,564,072
120 4,564,073
265 4,564,074
572 4,564,075

CLASS 174

10 4,564,721
35 GC 4,564,722
36 4,564,723

CLASS 175

4.52 4,564,076

CLASS 177

145 4,564,077

CLASS 178

18 4,564,078
4,564,079

CLASS 179

2 A 4,564,724
8 A 4,564,725
81 C 4,564,729
99 M 4,564,726
116 4,564,727
175.3 R 4,564,728

CLASS 180

8.2 4,564,080
229 4,564,081
268 Re.32,063
312 4,564,082

CLASS 181

114 4,564,083

CLASS 184

6.11 4,564,084

CLASS 187

9 R 4,564,085
12 4,564,086
56 4,564,087

CLASS 188

67 4,564,088
73.38 4,564,089
331 4,564,090

CLASS 190

11 4,564,091

CLASS 192

48.2 4,564,092
58 B 4,564,093
4,564,094
59 4,564,095
67 R 4,564,096
106.1 4,564,097
150 4,564,098

CLASS 198

323 4,564,099
341 4,564,100
4,564,102
346.2 4,564,101
358 4,564,103
422 4,564,104
457 4,564,105

CLASS 200

16 B 4,564,730
269 4,564,731
307 4,564,732

CLASS 202

123 4,564,419
139 4,564,420
254 4,564,421

CLASS 204

1 T 4,564,422
12 4,564,423
20 4,564,424
34.5 4,564,425
44.6 4,564,426
98 4,564,427
107 4,564,428
129.75 4,564,429
206 4,564,430
224 M 4,564,431
237 4,564,432
254 4,564,433
290 F 4,564,434
298 4,564,435
400 4,564,436

CLASS 206

165 4,564,106
315.9 4,564,107
438 4,564,108
597 4,564,109

CLASS 208

11 R 4,564,437
33 4,564,438
59 4,564,439
87 4,564,440
108 4,564,441

CLASS 209

148 4,564,442
211 4,564,443
544 4,564,110

CLASS 210

96.1 4,564,444
167 4,564,445
4,564,446
220 4,564,447
222 4,564,448
242.3 4,564,449
293 4,564,450
411 4,564,451
497.2 4,564,452
614 4,564,453
668 4,564,454
675 4,564,455
698 4,564,456
704 4,564,457
747 4,564,458

CLASS 211

189 4,564,111

CLASS 215

246 4,564,112
252 4,564,113
256 4,564,114
4,564,115
4,564,116
329 4,564,117

CLASS 219

10.77 4,564,733
56.22 4,564,734
110 4,564,735
121 ED 4,564,738
121 L 4,564,736
121 LH 4,564,737
4,564,739
121 PM 4,564,740
125.1 4,564,741
130.1 4,564,742
137 R 4,564,743
210 4,564,744
213 4,564,745
276 4,564,746
482 4,564,747
497 4,564,748
4,564,749

CLASS 220

8 4,564,118
270 4,564,119
337 4,564,120
359 4,564,121

CLASS 221

11 4,564,123
12 4,564,122
263 4,564,124
288 4,564,125

CLASS 222

61 4,564,126
96 4,564,127
135 4,564,128
207 4,564,129
4,564,130
213 4,564,131
522 4,564,132

CLASS 223

39 4,564,133

CLASS 224

42.41 4,564,134

CLASS 228

6.1 4,564,136
6.2 4,564,135
173.6 4,564,137
176 4,564,138

CLASS 229

5.5 4,564,139

CLASS 232

57.5 4,564,140

CLASS 235

89 R 4,564,750
146 4,564,751
437 4,564,752

CLASS 236

20 R 4,564,141

CLASS 237

8 R 4,564,142

CLASS 239

132.3 4,564,143
222.13 4,564,144
224 Re.32,064
585 4,564,145

CLASS 241

236 4,564,146

CLASS 242

35.5 A 4,564,147
55.3 4,564,148
58.1 4,564,149
4,564,150
68.3 4,564,151
86.5 4,564,152
107 4,564,153
107.4 A 4,564,155
107.4 B 4,564,154
197 4,564,156
199 4,564,157
220 4,564,158

CLASS 244

98 4,564,159
110 B 4,564,160
137 P 4,564,161

CLASS 246

432 4,564,162

CLASS 248

71 4,564,163
118 4,564,164
343 4,564,165
349 4,564,166
552 4,564,167
638 4,564,168

CLASS 250

213 VT 4,564,753
225 4,564,754
227 4,564,755
231 SE 4,564,756
239 4,564,757
309 4,564,758
324 4,564,759
327.2 4,564,760
341 4,564,761
381 4,564,762
396 ML 4,564,763
491.1 4,564,764
561 4,564,765
578 4,564,766

CLASS 251

58 4,564,169
88 4,564,170
209 4,564,171

CLASS 252

8.55 R 4,564,459
32.5 4,564,461
73 4,564,460
134 4,564,462
174.17 4,564,463
181 4,564,464
389 R 4,564,465
573 4,564,467
609 4,564,468
626 4,564,469

CLASS 254

1 4,564,172
133 R 4,564,173

CLASS 260

112.5 K 4,564,471
113 4,564,472
245.4 4,564,473
397.2 4,564,474
398.5 4,564,475
404 4,564,476
405.5 4,564,477
455 R 4,564,478
465 H 4,564,479

CLASS 261

36 R 4,564,480
39 A 4,564,481
44 B 4,564,482
64 B 4,564,483

CLASS 264

2.6 4,564,484
30 4,564,485
39 4,564,486
40.7 4,564,487
41 4,564,488
44 4,564,496
58 4,564,489
65 4,564,490
108 4,564,491
154 4,564,492
209.1 4,564,493
275 4,564,494
291 4,564,495
521 4,564,497

CLASS 266

149 4,564,174
227 4,564,175

CLASS 267

64.11 4,564,176
64.24 4,564,177

CLASS 269

17 4,564,178
71 4,564,179
75 4,564,180
88 4,564,181
102 4,564,182

CLASS 270

21.1 4,564,183
4,564,470
39 4,564,184
53 4,564,185
54 4,564,186

CLASS 271

9 4,564,187
103 4,564,188
201 4,564,189

CLASS 272

17 4,564,190
67 4,564,191
76 4,564,192
118 4,564,193
123 4,564,194

CLASS 273

29 A 4,564,195
67 B 4,564,196
86 D 4,564,197
176 F 4,564,198
213 4,564,199
332 4,564,200

CLASS 277

1 4,564,201
3 4,564,202

CLASS 280

47.32 4,564,203
154.5 R 4,564,204
166 4,564,205
252 4,564,206
402 4,564,207
423 B 4,564,208
468 4,564,209
604 4,564,210
605 4,564,211
642 4,564,212
690 4,564,213
707 4,564,214
4,564,215
770 4,564,216
804 4,564,217
4,564,218
808 4,564,219

CLASS 285

236 4,564,220
239 4,564,221
243 4,564,222
256 4,564,223
272 4,564,224
333 4,564,225
334 4,564,226
364 4,564,227

CLASS 289

2 4,564,228

CLASS 292

169.13 4,564,229
218 4,564,230

CLASS 294

96 4,564,231

CLASS 296

97 H 4,564,234
146 4,564,232
182 4,564,233

CLASS 297

284 4,564,235
344 4,564,236
423 4,564,237
430 4,564,238
452 4,564,239
457 4,564,240

CLASS 299

43 4,564,241

CLASS 301

6 CF 4,564,242
124 R 4,564,243

CLASS 303

6 C 4,564,244
15 4,564,245
85 4,564,246

CLASS 307

66 4,564,767
140 4,564,768
300 4,564,769
311 4,564,770
315 4,564,771
443 4,564,772
445 4,564,773
479 4,564,774

CLASS 308

3.8 4,564,247
4,564,248

CLASS 310

62 4,564,775
70 R 4,564,776
156 4,564,777
177 4,564,778
258 4,564,779
4,564,780
261 4,564,781
359 4,564,782

CLASS 312

229 4,564,249

CLASS 313

113 4,564,783
384 4,564,784
422 4,564,785
479 4,564,786

CLASS 315

3.6 4,564,787
4,564,788
79 4,564,789
169.4 4,564,790

CLASS 318

16 4,564,791
254 4,564,792
4,564,793
314 4,564,794
4,564,795
696 4,564,796

CLASS 320

2 4,564,797
6 4,564,798
4,564,799
36 4,564,800

CLASS 323

324 4,564,801

CLASS 324

51 4,564,802
71.1 4,564,803
103 P 4,564,804
121 R 4,564,805
154 PB 4,564,806
158 D 4,564,807
158 R 4,564,808
225 4,564,809
230 4,564,810
307 4,564,811
309 4,564,812
311 4,564,813

CLASS 328

26 4,564,814

CLASS 329

50 4,564,815

CLASS 330

149 4,564,816
286 4,564,817
311 4,564,818

CLASS 331

2 4,564,819
62 4,564,820
74 4,564,821
117 R 4,564,822

CLASS 332

17 4,564,823

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DESIGN PATENTS

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